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CLIMATOLOGICAL DATA

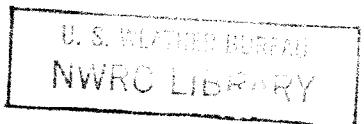
NATIONAL SUMMARY

JANUARY 1958

Volume 9 No. 1



ASHVILLE: 1958



C O N T E N T S

SURFACE DATA	Page
General Summary of Weather Conditions-----	1
Condensed Climatological Data - States-----	2
Climatological Data - Stations-----	3
Heating Degree Days-----	7
Storm Data and Unusual Weather Phenomena-----	8
General Summary of River and Flood Conditions-----	16
Flood Stage Data-----	18
 UPPER AIR DATA	
Rawinsonde Data-----	19
 SOLAR RADIATION DATA	
Solar Radiation Intensities-----	25
Blue Hill Data-----	26
Net Radiation-----	26
Daily Totals and Average Daily Totals by Weeks-----	27
 CHARTS I-XVII	

NOTE.--This publication contains all of the climatic data formerly printed in the **MONTHLY WEATHER REVIEW**.

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CLIMATOLOGICAL DATA

NATIONAL SUMMARY

Volume 9 No. 1

JANUARY 1958

GENERAL SUMMARY OF WEATHER CONDITIONS

January was unusually cold in the Southeast where the winter's second major freeze on the 8th and 9th further damaged Florida's crops. In contrast, continued abnormally mild temperatures from the Great Plains westward placed the December-January period among the warmest on record in that area. Precipitation was abnormally heavy along the Pacific and Atlantic coasts and in the southwestern Great Plains with locally heavy flooding in Texas. Precipitation was scanty in the north central Interior. Heavy snows fell in the Northeast and in a belt extending from the southwestern Great Plains to the Great Lakes. Snow depths were increased substantially in the Cascade and Sierra Nevada Mountains. Cold, wet weather held up agricultural activities in the South, but more moisture was needed in some western sections of the central and northern Great Plains and some extreme southern sections west of the Continental Divide.

Fog was the outstanding weather feature in California's Central Valley where Sacramento's 19 days with heavy fog was one more than the former record and more than three times the average number for January; and Red Bluff's 8 days equaled the average number there for an entire winter.

TEMPERATURE.--Temperatures for January averaged from 2° to 10° above normal in most of New England, 2° to 14° above west of a line joining Sault Ste. Marie, Mich., and Phoenix, Ariz. Elsewhere monthly averages were below normal with the greatest departures of 6° to 8° in the Southeast.

The cold weather in Florida was perhaps the main temperature feature of the month, since it was the second consecutive abnormally cold month with damaging freezes. Citrus fruit suffered additional damage and some truck damage occurred in all areas. Lowest temperatures, occurring on the 9th, ranged from the low 20's in the northern portion to the low 30's in southern section of the State. Daytime temperatures on the 8th remained near or below 40° in north and central portions of Florida, lower than daytime temperatures on the same date in North Dakota where 40's and 50's were the rule. Despite the fact that the month generally was the coldest January on record or the coldest since 1940 in Florida, no new records for extreme low temperatures were established at stations with longterm records.

Abnormally mild temperatures persisted in the northern Great Plains and Far West for the second consecutive month, but no extreme high temperature records for the month were broken. However, this was the first January at Glasgow, Mont., that the thermometer remained above zero, emphasizing the persistency of the relatively mild temperatures. Also, at Sheridan, Wyo., the December-January period was the mildest such period of record.

A pronounced January thaw was reported during the fourth week by Sault Ste. Marie, Mich., and Buffalo, N. Y.

PRECIPITATION.--Precipitation was above normal along the Atlantic coast and in most sections of the lower Great Plains and Pacific States, but

well below normal north of the Ohio River and in the northern Great Plains. Monthly totals exceeded an inch in Texas, Oklahoma, parts of Kansas, Missouri, Iowa, and east of the Mississippi River except in Wisconsin and Michigan. Totals along the Atlantic and Gulf coasts generally exceeded 4 inches.

Most of the precipitation east of the Rockies fell during the passage of storms from the vicinity of the Gulf of Mexico to the Northeast. On the 3d one of these storms produced 3 to 5 inches of rain in southern Florida.

Another storm on the 4th, 5th, and 6th brought 7 inches or more of flood-producing rains to the lower Rio Grande and Coastal Bend sections of Texas, and up to a foot of snow in western Texas and eastern New Mexico. Continuing eastward, this storm produced moderate to heavy precipitation in all Gulf coastal areas on the 6th and along the Atlantic coast on the 7th as it moved northward about 150 miles offshore after crossing the Florida Peninsula. Centered near Cape Cod, Mass., on the 8th, winds reached hurricane force over a small area, and Nantucket, Mass., had its lowest pressure for January, 28.35 inches. Precipitation was mostly in the form of heavy snow from Virginia northward. During the storm over 12 inches of snow fell in the lower Delmar Peninsula of Maryland and 8 to 15 inches along the coast of New Jersey with 2 to 4 inches in the west and central portions of the latter State. Falls up to 20 inches covered a belt 30 to 50 miles wide from central and eastern Connecticut and northwestern Rhode Island through north-central Maine and 2 to 4 inches covered the remainder of New England. Torrential rains in the Cape Cod area totaled up to 4.50 inches.

Still another storm moving from southern Texas to New England from the 12th to the 14th brought moderate to heavy precipitation to most of the East, except southern Florida and the Great Lakes region. Snow fell over the Appalachians and along their western slopes as far south as Kentucky and from New Jersey northward. Up to 2 feet of snow fell in eastern New York State and 8 to 15 inches in northern portions of Maine, New Hampshire, and Vermont, western Massachusetts and northwestern Connecticut. The heavy snow provided excellent skiing conditions in New England.

A frontal system produced light to moderate precipitation in the Far West on the 17th and in the midcontinent area on the 18th and 19th. One to 5 inches of snow furnished beneficial moisture to western portions of the central and lower Great Plains where some sections had received no measurable amounts since the middle of November. Continuing eastward from the 20th through the 22d, this frontal system produced moderate to heavy precipitation over most of the East. A band of heavy snow extended from Kansas to the Great Lakes, with depths ranging from 8 to 12 inches in northeastern Kansas, 10 to 15 inches in west central Missouri and southeastern Iowa, and up to 10 inches in southeastern Wisconsin and north-

GENERAL SUMMARY OF WEATHER CONDITIONS—Continued

JANUARY 1958

eastern Illinois, and 6 inches or more snow fell in New York and New England.

The month's last coastal storm moved along the Gulf coast and up the Atlantic coast from the 24th to 26th producing 1 to 2 inches of rain in coastal areas, and snow and sleet in northern portions of Louisiana and Mississippi.

On January 31, 4 to 10 inches of new snow fell in northeastern Missouri and from St. Louis, Mo., eastward across Illinois.

The month was one of the wettest Januarys on record in southern Florida, and in sections of the Northeast. Boston's total precipitation, 9.54 inches, was a new record there for January. At Burlington, Vt., a 33.7-inch snowfall was the greatest there for any month.

DESTRUCTIVE STORMS.—In Sonoma County, California, a tornado, a rare type of storm for that State, caused several thousand dollars damage on

the 10th. Wind and rain over the State from the 23d through the 26th was responsible for many thousands of dollars additional damage.

Wind and rain in southern Florida on the 2d and 3d was the worst winter storm in that area since the Miami Weather Bureau Office opened in 1911. Seven lives were lost, boats were damaged along the coast and crops damaged heavily. Total losses were estimated at hundreds of thousands of dollars.

A tornado in the vicinity of Cochran, Ga., on the 24th injured 16 persons and caused a few hundred thousand dollars damage. Another tornado in the vicinity of Macon, Ga., on the 31st, along with severe thunderstorms in the State, caused several thousand dollars damage.

Snowstorms hampered transportation and required great outlays of money for snow removal in many northern areas.

CONDENSED CLIMATOLOGICAL SUMMARY

JANUARY 1958

Section	Temperature						Precipitation					
	Monthly extremes						Monthly extremes					
	Station	Highest	Date	Station	Lowest	Date	Station	Greatest	Station	Least	In.	
		°F			°F							
Alabama	Brewton 3SSE	75	31	Bridgeport 2W	10	3	Robertsdale 7E	6.27	Decatur	1.00		
Arizona	Sacaton	83	2	Maverick	-7	20	Bright Angel RS	1.64	35 Stations	.00		
Arkansas	Crosssett 7S	74	31	Gravette	4	22	Sheridan Tower	5.50	Lee Creek Guard Sta.	.74		
California	Los Angeles WB AP	87	17	Loma	-8	16	Gasquet RS	22.74	3 Stations	.00		
Colorado	Eversell Ranch	70	30	Taylor Park	-35	21	Trout Lake	2.13	Kaufmann 4SSE	.00		
Connecticut	2 Stations	53	22+	Mansfield Hollow Dam	-12	10	Groton	9.68	Cream Hill	4.07		
Delaware	3 Stations	60	22	Georgetown 5SW	-5	10	Middletown 2S	4.15	Georgetown 5SW	2.57		
Florida	2 Stations	82	24+	DeFuniak Springs	18	9	Tavernier	11.06	Apalachicola WB City	2.37		
Georgia	Homerville	75	24	Blairsville Exp. Sta.	1	10+	Tray Mountain	5.44	Antioch	1.92		
Idaho	Kooskia	59	28	Obsidian 2NNW	-27	1	Elk River 1S	6.39	Mackay RS	.06		
Illinois	3 Stations	58	10	3 Stations	-15	4+	Du Quoin 2S	3.60	Kirkwood 3W	.45		
Indiana	Jeffersonville	37	10	South Bend WB AP	-5	8	Evansville	3.44	Muncie 4 SE	.75		
Iowa	2 Stations	59	8	Decorah	-16	3	Keosauqua No. 2	1.93	Sioux Center	.03		
Kansas	3 Stations	69	9	Sabeta Lake	-9	1	Bethel 1NW	2.97	Cedar Bluff Dam	.07		
Kentucky	Inez	69	21	Heidelberg Lock 14	-3	9	Campbellsville	4.05	Flemingsburg	1.23		
Louisiana	Urania	79	31	2 Stations	16	8	Burrwood WB	10.63	Gorum Fire Tower	2.43		
Maine	Portland	50	1	Cupuptic Storehouse	-16	10	Jonesboro	11.10	Caribou WB Airport	3.36		
Maryland	2 Stations	60	31	Oakland 1SE	-6	5	Conoway Dam	5.34	Cumberland Police Brks	2.26		
Massachusetts	Sandwich	57	22	Birch Hill Dam	-13	10	Spot Pond	12.73	Pittsfield WB Airport	3.37		
Michigan	Grayling Military R	48	13	Pelton CAA AP	-25	8	Houghton CAA AP	2.85	Willington 3SW	.45		
Minnesota	Canby	57	9	Isabella 1W	-26	7	Duluth WB AP	1.08	Worthington	.05		
Mississippi	Natchez	77	31	Corinth	5	8	Pearlington 2NNE	8.20	Independence 3N	1.89		
Missouri	3 Stations	67	10+	Albany	-13	1	Kennett Radio KBOA	4.33	Granby	.48		
Montana	Grass Range	69	2	2 Stations	-28	20+	Heron 2NW	4.61	Shelby	.00		
Nebraska	Benkelman	68	9	Walthill	-16	1	Falls City	2.16	2 Stations	.00		
Nevada	Overton	72	18	Mountain City RS	-12	22+	Glenbrook	3.54	Sarcobatus	.00		
New Hampshire	Portsmouth	50	1	Monroe 5NNE	-24	21+	Mount Washington	18.23	Bethlehem	3.42		
New Jersey	3 Stations	59	22	Rumney	-8	10	Cedar Grove	7.37	Belleplain	2.63		
New Mexico	Hagerman	82	31	Gavilan	-32	21	Cloudcroft 1	3.16	2 Stations	.00		
New York	Ossining Sing Sing	55	22	2 Stations	-26	12	Lake Ronkonkoma	9.53	Tannersville	1.03		
North Carolina	Cape Hatteras WB	66	1	Banner Elk	-3	9	Rush Mountain	7.95	Cane River	1.32		
North Dakota	Mott	62	8	Lisbon	-23	2	Balta	.79	4 Stations	T		
Ohio	2 Stations	58	14+	Mansfield 6W	-8	9	Clarendon Lock 14	3.21	Plymouth	.78		
Oklahoma	Kenton	72	30	2 Stations	5	22	Madill	4.88	Reigner	.17		
Oregon	Gold Beach RS	71	6	Seneca	-11	6+	Valsez	23.83	Buena Vista Sta.	.41		
Pennsylvania	4 Stations	57	22	Ridgway 3W	-16	9	Mt. Pocono 2N AP	7.30	Sutersville	.96		
Rhode Island	3 Stations	53	22	Greenville	2	5+	Woonsocket	8.42	Block Island WB AP	6.74		
South Carolina	Cahoum Falls	68	22	Landrum 5ENE	0	9	Charleston WB AP	7.20	Ridgeland 2SE	2.94		
South Dakota	2 Stations	70	8	Andover 7N	-15	2	Dumont 2ENE	.98	Numerous stations	T		
Tennessee	Newport	71	21	Unicoi 2ESE	-3	9	Haw Knob	6.15	Wolf Creek	1.14		
Texas	Rio Grande City 2ESE	86	31	Stratiord	8	22	Kingsville	12.53	Bunker Hill	T		
Utah	2 Stations	63	17+	Scofield Dam	-32	1	Silver Lake Brighton	3.65	2 Stations	T		
Vermont	Bennington 2NW	48	22	Enosburg Falls	-26	20	Wardsboro	7.23	Lemington	2.29		
Virginia	2 Stations	64	22+	Dante	-6	9	Montebello 3NE	6.39	Augusta Springs 1E	1.82		
Washington	Ice Harbor Dam	64	16	Stockdill Ranch	-7	1	Blue Glacier	30.74	Clarkston Heights	.61		
West Virginia	Williamson	69	22	Cranberry Glades	-14	5+	Pickens 1	6.04	Birch River 6SSW	1.38		
Wisconsin	Neillsville 1W	49	13	Hatfield Dam	-27	3	Racine	2.32	Montello	.09		
Wyoming	Metz Ranch	66	8	Bondurant	-39	20	Moore 3NW	3.91	8 Stations	.00		
Puerto Rico	Guayama	94	17	Garzas Dam	50	26	Paraiso	14.20	Yauco 1S	.17		
Hawaii	Upolu Point USCG	88	2	Mauna Loa Slope Obs.	22	1	Puuhokamoa	23.17	11 Stations	.00		

+ And also on a later date or dates.

Note: Dates in Table 1 apply to the period 24 hours prior to time of observation. In some cases the actual occurrence is on the calendar date preceding

that shown. (See individual Climatological Data for times of observations).

STORM DATA AND UNUSUAL WEATHER PHENOMENA

JANUARY 1958

Place	Date	Time	Length of path, miles	Width of path, yards	Number of persons		Estimated damage by categories †		Character of storm	Remarks
					Killed	Injured	Property (exclusive of crops)	Crops		
MICHIGAN (lower) Southwestern, central and northeastern portions	1	Morning			0	0	2		Snow	10 to 14 inches of snow.
MASSACHUSETTS Southeastern portion	1	5 a.m.					4	1	Wind and snow	Windstorm tore scallop dragger loose from berth at Fairhaven wharf and dashed against drawbridge. Damage confined to superstructure. Snowstorm up to 4 inches on Cape Cod and Martha's Vineyard required plowing and sanding roads; traffic seriously hampered and numerous highway accidents due to storm.
NORTH DAKOTA Grafton, Walsh County	1-9								Duststorm	Most severe in several years, limiting visibility to only a few feet in open areas.
IOWA Entire state	1-31				2	11	4		Snow	Left slippery streets throughout most of month in many parts of State. Numerous vehicle accidents and number of cases of falls on ice reported. These are in addition to concentration of accidents reported elsewhere on 19th-21st.
FLORIDA New Port Richey, Pasco County	2	Early a.m.			0	1			Wind (sus- pected tor- nado)	Three trailers in trailer park damaged or overturned. Nearby trailers not affected.
FLORIDA Southeast coast and Florida Keys	2-3	All day			7	Many	5	See re- marks	Wind and rain	Low-pressure area off southeast Florida coast developed rapidly on 2d, bringing strong winds, heavy rains, and rough seas to entire area. Gusts in excess of 70 m.p.h., reported in Dade and Monroe Counties. Rainfall varied from 3 to 4 inches in Dade and Broward Counties to about 8 inches on Keys. 2 freighters went aground at Miami Beach. Wind-driven tides overflowed overseas highway to Key West briefly at Key Largo. 1 vessel with 5 persons aboard missing and presumed lost. Storm reached maximum intensity about midnight 2d. Crop losses difficult to estimate, first believed \$2 million but now appears less. W.B.O., Miami reports this worst winter storm since that office established in 1911.
	3									Minor storm also reported at Petersburg, Alaska.
CALIFORNIA Central Los Angeles County and western San Bernardino County	3-5				0	0	3		Wind	Winds reached peak gust of 68 m.p.h., at Fontana morning of 5th. At Canoga Park wind blew over 130-foot boom of giant crane, damaging 14 parked automobiles. In Hollywood large acacia tree uprooted, falling across parked automobile. Many tree branches and signs blown down.
TEXAS From Presidio and Brewster Counties in southwest to Parmer, Castro, and Swisher Counties in Panhandle, and to lesser ex- tent farther north to state borders north and west	4-5		400	*175	0		Unknown		Snow	General heavy snowfall began on 4th in trans-Pecos area, reaching northern Panhandle and low Rolling Plains early on 5th. Many highways closed, hundreds of motorists stranded. In cities and towns, slicked streets accounted for many traffic accidents, and few in open country because of weather conditions. Snows which stranded motorists fell from Marfa area in southwest, north for 300 miles to Plainview area in South Plains, and into New Mexico. Lesser snows fell farther north in Panhandle and drifted as much as 3 feet in some places.
TEXAS Starr, Hidal- go, Cameron, Willacy, Brooks, Jim Hogg, Jim Wells, Refugio, Nueces, San Patricio, Live Oak, Bee, Karnes and Goliad Coun- ties	4, 5		200	*100			Unknown		Rain and wind	Winds 55 to 67 m.p.h., caused extensive damage to power lines, windows, signs, and trees. Boat damage light, mainly capsized small boats. In Corpus Christi area, estimated property damage \$75,000, exclusive of flood damage. Rains in this area totaled as much as 11 inches, unofficially, in some places. Part of major storm centered over northern Mexico on 4th brought snow to more northerly parts of State. 4-plus inches of rain fell in many places in Lower Rio Grande Valley and Coastal Bend in 24 hours. 3-day totals in excess of 7 inches recorded at many stations. Crops inundated, homes evacuated, and highways washed out.
	6									Minor storm also reported Southeast Alaska.
MICHIGAN (Upper)	6-7-8				0	0	2		Snow	10 to 15 inches of snow with considerable drifting.

See footnotes at end of table.

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Place	Date	Time	Length of path, miles	Width of path, yards	Number of persons		Estimated damage by categories †		Character of storm	Remarks
					Killed	Injured	Property (exclusive of crops)	Crops		
SOUTH DAKOTA Northern Black Hills, Law- rence County	7	3 a.m.			0	1	2		Ice	Automobile skidded and overturned on icy highway.
PENNSYLVANIA Southeast portion	7	Noon to midnight			0	5	4		Snow	Roads made slippery by 2- to 4-inch snowfall, resulting in numerous automobile accidents.
VIRGINIA East and east- central por- tions	7	Afternoon and evening							Snow and wind	Snow, strong winds, and high tides combined to paralyze Hampton Roads area. Up to 11 inches of snow reported at Chincoteague. Highway department reported weather-caused mishaps all-time high in eastern Piedmont and Tidewater Va. Coastal low accounted for this weather.
NORTH CAROLINA Central, west- ern, and north- eastern por- tions	7				0	10	4		Snow, sleet and glaze	Several inches of snow in northeast, sleet and glaze in central and west, and rain in southeast. At least 4 school bus accidents; many automobile accidents. Schools closed in some areas.
NEW YORK Southeastern portions	7				4	10	4	1	Snow and wind	Coastal storm brought snow and some wind mostly to New York City and Long Island. 4 persons died from heart attacks caused by snow-fighting. At least 10 injuries in traffic accidents. 22,000 homes without power, due to lines down from heavy, wet snow and winds.
NEW JERSEY	7								Snow	Intense coastal storm deposited 2 to 4 inches of snow over west and central portions and 8 to 15 inches along coast and a few miles inland.
CONNECTICUT and RHODE ISLAND	7-8	1 p.m., 7th- 4 a.m. 8th			10	Many	5		Snow, rain, wind, and electrical	Most severe coastal storm in 2 years yielded 15 to 20 inches of snow from New Haven to Putnam, Conn., and northwestern Rhode Island; 6 to 12 inches elsewhere, except trace of snow and 2 to 3 inches of rain in extreme southeast. Highest storm totals 2.96 inches of rain at Quonset, R. I., and 20 inches of snow at Colchester, Conn. Wind gusts to 75 m.p.h., Narragansett Bay and lowest barometer of 28.62 inches at Block Island occurred early on 8th. Snow caused collapse of brick drying shed at Middletown for loss of \$40,000. Extensive power failures due to snow and wind breaking limbs and wires. Destroyer-type vessel damaged at Newport when struck by wind-driven vessel. Winds also damaged store windows and small structures in southern Rhode Island and raised tides 2 feet above normal to flood and erode shore roads and beaches. Snow, occurring during evening rush hours, greatly snarled traffic with scores of accidents and abandoned vehicles. Deaths all from overexertion. Many minor injuries in traffic accidents. Mammoth job of snow removal tied up road equipment more than 24 hours. Lightning observed in Rhode Island and blamed for brief failure of TV station. Storm damage considerable to smashed vehicles, power lines, and collapse of structures from rather heavy snow. Rain beneficial in filling long depleted reservoirs at Newport, R. I.
MAINE; NEW HAMPSHIRE; MASSACHUSETTS Eastern portion	7-8	P.m., 7th - noon 8th			36	Un- known	6	1	Snow, wind, and rain	One of most intense coastal storms in years, attended by winds of hurricane force near center Nantucket and Cape Cod Canal). Lowest January pressure of record at Nantucket, 28.35 inches. Greatest damage by wind over southeastern Massachusetts where trees and wires downed and buildings and property damaged. 150 homes damaged in historic Plymouth alone. Wind driven high tides flooded low coastal roads on Cape Cod and broke sea wall to undermine road at Wells Beach, Maine. Most other parts of New England had 6 to 12 inches of snow, although 15 to more than 20 inches fell in belt 30 to 50 miles wide extending from south-central Massachusetts to north-central Maine. 1 to 6 inches of snow fell along coast north of Cape Cod, while on Cape precipitation in form of rain totaled 3 to 4 inches. Traffic in all parts of area seriously delayed. Deaths mostly from overexertion due to walking or shoveling snow. Snow removal costs probably exceeded direct storm damage.
CALIFORNIA Northern and central portions	9				0	0	3		Rain, thunder- storms and hail	Minor storms also reported at Dickinson, North Dakota.
	9-10									General storm crossed northern and central California accompanied by widespread thunderstorms with hail in coastal areas. Hail broke windows in homes in Sausalito, and hailstones with

See footnotes at end of table.

STORM DATA AND UNUSUAL WEATHER PHENOMENA

JANUARY 1958

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					Killed	Injured	Property (exclusive of crops)	Crops		
CALIFORNIA (Cont'd.)										diameters of 1/8 to 1/4 inch fell in Mission District of San Francisco. Minor flooding in Oakland, Marin County, and on San Francisco Peninsula.
CALIFORNIA Crescent City, Del Norte County	10	2:45 a.m.	3/4	60	0	0	3		Tornado	First dipped down to sweep distance of 2 blocks on Huntington Street in Beresia Tract, then apparently skipped northeastward to dip down again in 2-block path on Amador Street in Filkins Tract. Roofs torn off, windows smashed, television antennas bent or twisted, wood piles scattered, and trees uprooted or shorn of limbs. An observer reported the sound was like the rumble of a train coming toward him, awakening him from sleep just before his roof was torn off. Tornado moved northeastward.
CALIFORNIA Bodega Bay- Sebastopol, Sonoma County	10	5:55-6:15 a.m.	15	25- 100	0	0	4		Tornado	Apparent path from Bodega Bay to midway between Sebastopol and Santa Rosa. 3 fishing boats sunk at Bodega Bay; guest cottages knocked from foundations; roofs torn from buildings. No reported damage between Bodega Bay and Sebastopol. Coming from west at Sebastopol, struck areas of Water Trough Road, Elphick Road, Cooper Road, and Kelly Subdivision. At Elphick Road, width of path 75 to 100 feet. Funnel not clearly discerned because of darkness, but appeared to dip and then rise. Observer reported hearing loud roaring noise growing in volume as funnel approached. Heavy thunder and lightning with flashes at 1 minute intervals. Hail fell for brief interval. Trees uprooted on Water Trough Road; houses and ranch buildings damaged on Elphick and Cooper Roads, with a few small outbuildings almost completely demolished. Chicken ranches hard hit, with many wire cages demolished or deposited on roofs and in trees; heavy loss of poultry. At Kelly Subdivision house moved off its foundation. Tornado continued eastward along Todd Road with diminishing violence, dissipating a few miles west of Santa Rosa. Moved east-northeastward.
	10-11									Minor storm also reported in Salt Lake City, Utah area.
NEW YORK Syracuse, Onondaga County	11				1	0	0	1	Snow	90-year old man in Syracuse died of heart attack while sweeping 3-inch snowfall from walk.
	12									Minor storms reported at Reno, Nevada, and Sodol, Oklahoma.
ALABAMA Madison County	13	Morning					4	1	Winds	Gusts did scattered damage over Huntsville and surrounding areas.
NORTH CAROLINA Western portion	13				1	200	4		Glaze	Icing in western half of State. Most of accidents in vicinity of Winston-Salem, where glazing occurred suddenly in early morning. Estimated 200 persons hospitalized. Number of very slight injuries in thousands. Single death reported was in automobile accident, 1 of several hundred attributed to icy streets and highways.
SOUTH DAKOTA Northern Black Hills and south- western Counties	13-15	P.m., 13th- a.m., 15th			1	2	3		Glaze	Six separate accidents resulted from highways glazed by freezing drizzle and packed snow.
LOUISIANA Tallulah, Madison Parish	14	Early a.m.			2	3	3		Fog	Six automobiles crashed in heavy fog, killing 2 and injuring 3 persons.
TEXAS Greenville, Hunt County	14	3:45 p.m.	1/4	25	0	0	3		Tornado	Tornado moving northeastward, wrecked 2 barns and 2 sheds, ripped out power line or two, and toppled TV antennas. Developed as white rather than dark funnel. All reports said twister swirled clockwise instead of counter-clockwise.
TEXAS Forney, Kauf- man County	14	4:40 p.m.			0	0			Funnel aloft and hail	Storm moved northeastward.
TEXAS Wills Point (2 miles east of), Van Zandt County	14	5:30 p.m.	5	300	0	0	3		Tornado and funnel aloft	Farm store considerably damaged. Two funnels, only 1 touched ground. Light hail and rain. Tornado moved northeastward.

STORM DATA AND UNUSUAL WEATHER PHENOMENA

JANUARY 1958

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					Killed	Injured	Property (exclusive of crops)	Crops		
TEXAS (Between Bon- ham and Ector) Fannin County	14				0	0			Funnel aloft	Observed moving northward.
TEXAS Delta County (15 miles northeast of Commerce, Hunt County)	14				0	0			Funnel aloft	Observed moving northeastward.
MAINE; NEW HAMPSHIRE; MASSACHUSETTS Eastern portion	14-15	P.m. 14th -all day 15th			2	12	6	1	Snow, rain, wind, and glaze	Heavy precipitation throughout area, and minor wind damage along east coast of Massachusetts. Second severe coastal storm in week. Precipi- tation mostly as rain (up to 3 inches) over southeastern Massachusetts, (including Spring- field area) and as mixed rain and snow, chang- ing to heavy, wet snow (3 to 11 inches) else- where in Massachusetts and as snow in northern New England (5 to 14 inches). Greatest damage from flooded cellars over eastern and southeast- ern Massachusetts. Cost of snow removal esti- mated at more than \$500,000. Glaze-slicked highways at times over central Massachusetts, southeastern New Hampshire, and southern Maine caused numerous highway accidents, accounting for deaths and injuries reported. Loss of power in some areas as wires downed by ice and snow accumulations and wind.
CONNECTICUT and RHODE ISLAND	14-16	Noon 14th- late p.m. 16th			0	Many			Freezing rain, rain and snow	Scores of persons injured by falls on icy walks, but traffic accidents relatively few and minor tieups. Ice-laden limbs and trees resulted in extensive power failures in western and south- eastern Connecticut. Seepage into underground cable broke phone service in Woonsocket-Pawtucket areas of Rhode Island. Heavy rain flooded base- ments and streets at Woonsocket; residents along shore roads isolated by flooding in Norwalk area of Connecticut. Ice jam on Shetucket River posed flood threat until dam gates closed upstream. Freezing rain on 14th resulted in early closing of offices, schools, and factories in both States.
PENNSYLVANIA Eastern counties	14-18	All day			1	14	4		Rain and freezing rain	Icy and rain drenched streets and highways re- sponsible for many automobile accidents in which 1 person killed.
NEW YORK Entire State	14-19				12	Many	5		Snow, sleet, glaze, rain, and wind	Freezing rain and sleet began in southern sections on 14th, but from 15th to end of storm most of precipitation snow. Snow depths up to 30 inches in Catskills. By 18th and 19th heaviest fall in snow belt south of Lakes Erie and Ontario. 12 persons died from either heart attacks shoveling snow or traffic accidents attributed to weather. Damage from hundreds of traffic accidents not estimated and injuries from accidents and falls on icy pavements probably ran into hundreds. Gale force winds in coastal sections caused damage with 1 chimney blown down at estimated \$10,000 damage. Freezing rain and wet snow raised havoc with lines and tree limbs. Greatest amount of storm trouble in western and southeast- ern New York with lesser storminess in northern counties.
WASHINGTON Western portion	15-17								Rain and snow	Landslides occurred in lower elevations of western Washington and snowslides in higher elevations of Cascades as result of heavy precipitation between 15th and 17th. 1 freight train derailed by landslide near Bellingham. Rail traffic de- layed by slides in other localities. Snowslides delayed traffic over mountain passes.
SOUTH DAKOTA Southeastern counties	18-19	P.m. 18- p.m. 19th			1	15	4		Glaze (freezing drizzle)	Numerous falls and automobile accidents.
IOWA Most of State	19-21				2	26	4		Snow	Heaviest in southeast and central. Many schools and some industries closed. Transportation dis- rupted. Slippery highways resulted in many traffic accidents. 2 deaths attributed to heart failure brought on by battling snowdrifts.
KANSAS Eastern portion	19-22				2	Many			Snow	As cold air mass moved into Kansas, snow began in northwest just after midnight on 19th, and spread eastward preceded by rain in south and east. Total snowfall 1 to 3 inches in south-central and southwest to 5 to 8 inches over most of north and extreme southeast. Heaviest in east- central and extreme northeast where some falls

See footnotes at end of table.

STORM DATA AND UNUSUAL WEATHER PHENOMENA

JANUARY 1958

Place	Date	Time	Length of path, miles	Width of path, yards	Number of persons	Estimated damage by categories †		Character of storm	Remarks	
						Killed	Injured	Property (exclusive of crops)	Crops (of crops)	
KANSAS (Cont'd.)										of 10 to 14 inches. High winds with gusts to 50 m.p.h., January 21, drifted snow badly over eastern half, blocking many roads and arterial highways. Traffic ways became slick and hazardous, especially in cuts and shady areas. Many accidents; 2 persons killed in separate accidents in Kansas City, Kans.
COLORADO Denver, Denver County	21	Early a.m.			1	0		Snow and cold		Elderly man died of exposure in Denver, during below zero temperatures, following 7-inch snowfall of 18th, 19th and 20th.
FLORIDA Cedar Key, Levy County	21	9:45 a.m.			0	0		Waterspout		Strong winds extended to shore in Cedar Key, breaking off several trees. Moved eastward.
FLORIDA Knights, Hillsborough County	21	11:20 a.m.	2	100	0	0		Tornado		Path mainly through open fields and through 1 citrus grove where number of trees uprooted. 1 large shed demolished and irrigation systems damaged. Tornado moved eastward.
FLORIDA Lake Conine, Polk County	21	12:30 p.m.			0	0		Tornado		Cloud touched ground momentarily in spots; unroofed 1 house and uprooted about 20 citrus trees. Tornado moved east-southeastward.
FLORIDA Cocoa Beach, Brevard County	21	1:40 p.m.			0	0		Waterspout		Waterspout moved ashore from Banana River, overturning 1 trailer in trailer park.
MISSOURI West central portion	21	Most of day			17			Snow		10 to 15 inches of snow fell, with considerable drifting, blocking roads and streets. Heaviest snowfall apparently in Kansas City area with 15 inches.
ILLINOIS Northwest portion	21	All day			Se- ver- al			Snow		Snowfall 5 to 10 inches northwest of line extending from south of Quincy to southeast of Peoria to south side of Chicago. It became heavy on morning of 21st and continued all day ending during night. Northeast winds of 20 to 30 m.p.h., closed many highways and stranded motorists away from home. Several persons died from overexertion during storm.
MASSACHUSETTS Central and eastern por- tions; MAINE and NEW HAM- PSHIRE southern portions	21-22				5	1		Rain and snow		Heavy rain over Massachusetts, southeastern New Hampshire, and southern Maine, and heavy snow over small area of southwestern New Hampshire. Some freezing rain in intermediate areas added to hazardous travel. Once again major damage resulted from flooded cellars, especially over eastern and southeastern Massachusetts. Over interior Massachusetts, southern Maine, and southeastern New Hampshire, city streets flooded as sewers clogged by ice and snow. In Acton, Mass., 2 buildings collapsed on 22d from combined weight of accumulated snowfall (from previous storms) and heavy rains of this storm.
CONNECTICUT and RHODE ISLAND	21-22	P.m., 21st late p.m. 22d			0	Many	4	Freezing rain, rain, fog, and electrical		Widespread heavy fog p.m. of 22d halted or delayed both air and surface travel. Main damage from flooded basements and streets in central Connecticut and Providence area. One homeowner claimed \$1,000 damage to appliances in flooded cellar. Rising water from precipitation exceeding 1.5 inches and ice jam damaged bridge on Housatonic River at New Milford and forced traffic detour. Lightning struck radio tower at Litchfield, interrupting police and teletype communications for several hours. Over 300 phones out in western Connecticut due to lightning strikes and seepage into cables. Many injured from falls on icy walks on 21st.
MICHIGAN (Lower) Southwestern and central portions	21-22				0	0	2	Snow		Up to 15 inches of snow.
	21-23									Minor storm also reported in Salt Lake City, Utah area.
PENNSYLVANIA Eastern counties	22	All day			0	3	4	Rain and freezing rain		Automobile accidents common in Pocono Mountain area where roads covered with ice. Elsewhere heavy rain accompanied storm. In Philadelphia area thunderstorm responsible for lightning-caused warehouse fire.
CALIFORNIA Western San Bernardino County	22				0	0		Wind		Northerly gales blowing through mountain passes reached peak gust of 56 m.p.h., at Fontana. Portions of highways closed to house trailer traffic because of wind hazard. Sand whipped across highways radiator-high in some areas.

See footnotes at end of table

STORM DATA AND UNUSUAL WEATHER PHENOMENA

JANUARY 1958

Place	Date	Time	Length of path, miles	Width of path, yards	Number of persons	Estimated damage by categories +		Character of storm	Remarks	
						Killed	Injured	Property (exclusive of crops)	Crops	
WASHINGTON Entire State	23							Wind and rain	Strong wind over entire State. Heavy precipitation in some localities. Power and communication outages in all areas. Buildings damaged by wind in some localities.	
CALIFORNIA Entire State	23-26				9	6	5	Wind, rain, and tornado (suspected)	Two closely associated storms caused heavy rainfall and locally strong winds. In north, heavy rains caused numerous earth slides and local flooding. 9 cars of freight train derailed by slide in Plumas County. Many minor slides in San Francisco Bay area. 5 families evacuated from flooded homes at Kentfield, and flooding occurred in other areas of Marin County, on San Francisco Peninsula, and in Santa Cruz County. Flood waters threatened bridge in Cuyama Valley, and several rock slides occurred in Kern Canyon area. At Sacramento, rain fell at excessive rate of 0.57 inch in 20 minutes. Gale winds damaged trees in vicinity of Los Banos, and several trees toppled in Marin County, Oakland, and coastline San Mateo County. Possible tornado along path between Irwin and Turlock in Merced and Stanislaus Counties caused considerable damage to farm buildings, trees, and utility lines on 25th. Storm caused numerous traffic accidents. 8 persons killed in storm-contributed traffic accidents in northern California and 1 person injured. Boy Scout lost in blizzard in Mendocino National Forest was found dead from exposure. In south, heavy rains flooded many streets in Santa Barbara, West Los Angeles, Torrance, El Segundo, Manhattan Beach, and San Gabriel Valley. Water up to 4 feet deep reported at intersection in Culver City. Numerous rock and earth slides occurred in mountains and hilly areas. Locally strong winds caused damage to utility lines and trees, and at Redondo Beach 2 boats torn from moorings and sank after smashing against seawall. 2 persons injured in storm-contributed traffic accidents, 1 person injured aboard boat, and 2 persons swept almost mile down rain swollen drainage ditch after their car ran off road near Etiwanda, but escaped with minor injuries.	
SOUTH DAKOTA Northern counties	23-29				0	2	3	Ice	In some cases accidents on highways did not occur until several days after precipitation ended.	
TENNESSEE Chinquapin Community Sullivan County	24	Near noon					4	1	Wind	Barn blown more than 100 feet; several trees uprooted; damage to several barns and houses.
GEORGIA Cochran, Bleckley County	24	2:50 p.m.	1- 1/2	200	0	16	5	1	Tornado	Storm completely demolished about 10 houses and damaged 50 others as it moved through southern residential section of Cochran. 4 of injured hospitalized, others treated for minor injuries. Apparently same tornado that struck Cochran did considerable damage earlier in rural section of Pulaski County to southeast of Cochran. Funnel cloud at tree-top level was seen by truck driver 3 miles northeast of Cochran shortly after storm hit town. It apparently did not reach ground at any other point. Tornado moved northeastward.
WEST VIRGINIA Tucker County	24	After- noon and evening			0	0		Wind	Roofs blown off or damaged in undetermined number of homes, stores, and other buildings. At least 1 antenna mast blown down and at least 1 barn door torn off and demolished. Trees uprooted. Damage not estimated.	
	24								Minor storms also reported in western portion of North Carolina also Erwin and Elizabethton, Tennessee.	
VIRGINIA Central and eastern portions	24-25	Near mid- night						Wind	Strong winds, between 50 and 60 m.p.h., along coast and inland as far as Richmond caused damage to roofs, overhead utility lines, and trees. 2 to 8 inches of snow in mountains before snow changed to rain in western Piedmont.	
PENNSYLVANIA Statewide	25	All day			6	6	4	Rain and snow	50 to 70 m.p.h., wind unroofed several buildings and caused much other property damage. Deaths and injuries attributed to automobile accidents induced by slippery roads and heart attacks brought on by overexertion from shoveling 4- to 12-inch snowfall.	

See footnotes at end of table.

STORM DATA AND UNUSUAL WEATHER PHENOMENA

JANUARY 1958

Place	Date	Time	Length of path, miles	Width of Path, yards	Number of persons Killed	Number of persons Injured	Estimated damage by categories †	Property (exclusive of crops)	Crops	Character of storm	Remarks
MARYLAND North-central portion	25						4		Wind		A "northeaster" type storm caused damage in many areas of State. At 5:08 a.m., peak gust of 78 m.p.h., reported at Friendship International Airport. Many store owners in Baltimore and surrounding counties reported cracked and broken window glass. Baltimore Gas and Electric Company and Chesapeake and Potomac Telephone Company reported dozens of trouble calls; wind had snapped wires, shorting circuits or disrupting service. Some county roads blocked by trees. Shipping in Chesapeake Bay and in Chesapeake and Delaware canal slowed by gale force winds.
MASSACHUSETTS Central and eastern portions; MAINE and NEW HAMPSHIRE Southern portions	25-27						5		Rain		Coastal areas received 2 to 4 inches of rain. Major damage from flooded cellars due to cumulative effect of precipitation from this storm and unusually frequent and heavy precipitation since 13th of this month, and from snowmelt over interior areas. Laundry room and part of concrete foundation of home collapsed at Hudson, Massachusetts, on 26th from combined weight of snow (from previous storms) and rains of this storm. Charles and Neponset Rivers (near Boston) rose above flood stage to inundate low-lying areas.
FLORIDA Arcadia, De-Soto County	26	11:50 a.m.			0	0		Tornado (suspected)			Strong winds did localized damage that left appearances that tornado had visited area. Several buildings damaged.
FLORIDA Palm Beach, Palm Beach County	26				0	0		Waterspout			Waterspout remained offshore.
	27										Minor storm also reported in Salt Lake City, Utah area.
OREGON Western and central portions	29	Afternoon and evening	400	*100-200			4	1	Wind and rain		Winds, reaching gusts of 60 to 75 m.p.h., at several points, up to 110 at the Mt. Hebo Air Force installation atop peak in Coast Range, and 81 m.p.h., at Columbia Lighthouse, broke out number of large plate glass windows in stores of several northwest Oregon cities, broke windows in score or more homes, caused hundreds of power service interruptions over western Oregon, blew down or broke off large number of trees, caused structural damage to several large buildings, and caused several thousand dollars worth of other damage.
											Heavy rains brought many western streams up to near flood stage, but with exception of Rogue, no serious flooding occurred. In town of Rogue River 6 homes flooded and 12 families evacuated for short time. Some damage in lower sections of several cities and towns when heavy rains, exceeding runoff capacity of storm sewers, caused basement flooding.
WASHINGTON Western portion	29				1	6	5		Wind		Most severe windstorm this winter occurred as low-pressure area approached coast. Wind speeds at coastal stations ranged from 60 to 80 m.p.h., and from 40 to 60 m.p.h. in interior valleys and in Puget Sound area. Wind speeds in excess of 100 m.p.h. recorded at a mountain observational station near coast. Ferry service discontinued to some points on Puget Sound during peak of storm. An unusually large number of power outages occurred when poles blown over or lines damaged by falling trees. Several persons in Seattle received minor injuries from flying glass when large plate glass windows broken by wind. Falling trees damaged residences and other property. 1 person killed and another seriously injured while repairing damaged power lines.
CALIFORNIA Northern portion	29-30				0	0	4		Wind and rain		Heavy rains with locally strong winds. Mud slides blocked Northwestern Pacific Railway 30 miles south of Eureka. Highway 101 partially blocked by slides near Leggett. Several small slides in Santa Cruz Mountains. Some areas of Kentfield in Marin County again flooded. Eel River at Fernbridge reached stage of 19.2 feet on 30th, flooding about 5,000 acres. Strong winds blew down trees near Salinas, and power lines suffered some damage.
ALABAMA Belgreen, Franklin County	31	1:30 p.m.	3	400	0	0	3	1	Tornado		Destroyed one home and damaged 3 others. Tornado moved northeastward.

See footnotes at end of table.

STORM DATA AND UNUSUAL WEATHER PHENOMENA

JANUARY 1958

Place	Date	Time	Length of path, miles	Width of path, yards	Number of persons	Estimated damage by categories †			Character of storm	Remarks
						Killed	Injured	Property (exclusive of crops)	Crops	
TENNESSEE Cleveland, Bradley County	31	4:45 p.m.				4	0	Electrical		Fire, resulting from lightning, damaged home.
GEORGIA Macon, Bibb County	31	11:15 p.m.	Short Narrow		0 0	5	1	Tornado (suspected)		Storm hit small area in south Macon, destroying service station and novelty shop and heavily damaging grocery store and several other buildings. A little earlier possibly same storm destroyed house at Lizelia several miles to west of Macon. Tornado moved eastward.
GEORGIA North portion	31	P.m.				4	1	Wind, hail, and electrical		High winds associated with severe thunderstorms caused damage at several places as squall line moved across north Georgia on night of January 31. Barn blown down and several houses damaged in Farmville Community of Gordon County 1 person injured near Dallas in Paulding County as winds destroyed 2 poultry houses. Some wind damage resulted in Atlanta area when gusts reached 52 m.p.h. Hail fell in Rome, Griffin, Decatur, and near Athens.
ILLINOIS South-central portion	31	Most of day						Snow		Snow became heavy at Alton by mid-morning. Storm moved rapidly eastward with snow ending by 9 p.m. Falls of 4 to 8 inches general in 70-mile wide zone extending from Alton eastward to Indiana border. Heaviest snow in East St. Louis metropolitan area where falls of 8 to 10 inches tied up all traffic. An unusually heavy storm for this area.
MISSOURI East central portion	31	Most of day			2			Snow		Up to 11 inches of snow in St. Louis. Traffic snarled, business disrupted.
	31									Minor storm also reported Hamilton County Tennessee.
KANSAS Eastern portion	Jan. 31 Feb. 1				0			Snow		Between 1 and 2 inches of snow fell over east on afternoon of January 31. Many roads east of Wichita, Emporia, and Topeka became slick and hazardous for traffic. Packed snow in highway cuts particularly dangerous.

* Miles instead of yards.

† Includes crop damage.

C Crop damage.

‡ Storm damages are placed in categories varying from 1 to 9 as follows:

- 1 Less than \$50
- 2 \$50 to \$500
- 3 \$500 to \$5,000
- 4 \$5,000 to \$50,000
- 5 \$50,000 to \$500,000
- 6 \$500,000 to \$5,000,000
- 7 \$5,000,000 to \$50,000,000
- 8 \$50,000,000 to \$500,000,000
- 9 \$500,000,000 to \$5,000,000,000.

GENERAL SUMMARY OF RIVER AND FLOOD CONDITIONS

JANUARY 1958

Severe flooding occurred in the Corpus Christi area of Texas early in January. Light to moderate flooding occurred on several other Texas streams. The flooding on the Charles and Neponset Rivers in the Metropolitan Boston, Mass., area was the worst to ever occur in January. Flooding reported elsewhere over the country was mostly light.

ATLANTIC SLOPE DRAINAGE

Excessive rain during the period from the 15th to the 29th caused the worst January flood ever experienced on the Charles and Neponset Rivers in the Metropolitan Boston, Mass., area. During this period 7.08 inches of rain was reported. The total for the whole month was 9.54 inches, which is the heaviest on record for Boston. The crest on the Charles River at Charles River Village was the 4th highest of record. Several highways and many basements were flooded. Some bridges were closed but none destroyed.

The Wallkill River exceeded flood stage at Phillipsburg, N. Y., on the 27th and 28th due to ice jams below the station. Flooding was minor.

The flooding on the Raritan and Millstone Rivers on the 22d was due to heavy rains on the 21st to the 22d. Low-lying roads in the Manville-Bound Brook, N. J., area were inundated for a short period on the 22d. Heavy rain again on the 25th caused the Millstone River to exceed flood stage on the 25th.

Minor flooding occurred in Perkiomen Basin at Graterford, Pa., during the early afternoon of the 25th. This flooding was due to almost 1 inch of rainfall in less than 6 hours during the early morning hours of the 25th. In an earlier rise, this stream approached within 0.1 foot of flood stage on the 22d.

Heavy rainfall on the 13th to 14th caused flooding on the Neuse and Cape Fear Rivers in eastern North Carolina from the 15th to the 27th. Additional heavy rain on the 24th to the 25th caused flooding on all the rivers in eastern North Carolina, except the Dan River, during the remainder of the month. None of the flooding was serious, and no significant damage was reported.

Considerable flooding occurred along the Pee Dee River in South Carolina and tributaries of the lower Yadkin below Tillery Reservoir from the heavy rain on the 24th-25th. Runoff was heavy as this storm was preceded by rains of 1/2 to 1 inch on the 21st and 22d. A new high crest of 26.2 feet was reached on the Rocky River at Norwood, N. C. The tentative flood stage at this point is 16 feet. Only minor damage resulted to flooded fields at Norwood, N. C.

General rains of 1 to 2 inches on the 24th and 25th caused flooding on the Saluda and Broad Rivers in South Carolina. Damage was insignificant.

The Savannah River was near or slightly above flood stage at Clyo, Ga., most of the month. No damage resulted.

EAST GULF OF MEXICO DRAINAGE

The minor flooding on the Tombigbee River at Whitfield, Ala., from the 25th to the 31st was due to heavy rain on the 24th. No damage occurred.

Rains of 1 to 3 inches on the 20th to 21st produced minor flooding along the Pearl River in Mississippi and Louisiana. No damage was reported.

Upper Mississippi Basin.--The monthly mean stage of the Mississippi River at St. Paul, Minn., for January was 3.0 feet, 0.5 foot above normal. At

La Crosse, Wis., the monthly mean stage was 5.0 feet, 0.6 foot above normal. These were the highest monthly mean stages at these points for January since 1952.

A comparison of snow depths on January 31 with that of other years is given in the following table:

COMPARATIVE SNOW DEPTHS (INCHES)

Station (Minnesota)	1958	1957	1956	1955
Bismarck	5	11	26	8
International Falls	8	11	22	15
Duluth	11	14	29	17
Fargo, N. Dak.	2	2	7	3
Alexandria	5	2	16	6
New Ulm	3	T	6	4
Minneapolis	2	2	11	6
Rochester	2	1	10	3
Park Falls, Wis.	12	13	21	17

Floods or near flood conditions developed on the Kaskaskia and Sangamon Rivers in Illinois from the 23d to the 27th due to moderate to heavy rains from the 20th to the 21st. Several stations reported 1.5 to 2 inches of rain in approximately 24 hours. There was no damage of any consequence from the flooding of the Kaskaskia River.

Ohio Basin.--The flooding along the Wabash, White, Green, and lower Ohio during the latter part of December continued into the first few days of January. The Ohio crested during the early days of January. A report on this flood is given in the December issue of this publication.

A 2-inch rain on the 20th and 21st resulted in a minor flood along the Skillet Fork and the Little Wabash River in Illinois. This was the third consecutive month with flooding on these streams. Little if any additional losses were reported from the high water in January.

Red Basin.--General heavy rains with storm totals ranging from 1.75 to 3.5 inches between the 19th and 21st caused minor flooding on the Ouachita in Arkansas and on the Sulphur in Texas. Losses from the flooding were comparatively small.

Lower Mississippi Basin.--The St. Francis River continued in flood at St. Francis, Ark., from December 23 through January 5. This flooding was due to heavy rain from December 17 to December 20.

The minor flooding on the Big Black River near Bovina, Miss., from the 25th to the end of the month was due to heavy rain on the 21st and 24th. Only farmlands and pastures were affected. Damages were light.

WEST GULF OF MEXICO DRAINAGE

The flooding on the Sabine River in Texas was due to heavy rain from the 19th to the 21st. Rainfall during the period averaged 1.75 inches. Damages were minor.

There were two minor overflows on the Trinity River at Liberty, Tex., during the month. These overflows were due to heavy rain on the 12th, 13th, 20th, and 21st. Rainfall during each storm averaged 1.75 inches.

The moderate flooding on the Guadalupe River at Victoria, Tex., from the 15th to the 17th was due to heavy rain of 1.5 inches on the 12th and 13th. Runoff was heavy as the soil was nearly saturated from the heavy rains on the 5th and 6th. Several

GENERAL SUMMARY OF RIVER AND FLOOD CONDITIONS—Continued

JANUARY 1958

thousand acres of grazing land were flooded below Victoria. During this storm the San Antonio River reached about three-fourths bankfull stage at Goliad, Tex. Another period of moderate rains on the 23d and 24th caused another rise in all rivers, with some flooding again on the lower Guadalupe and also on the Lavaca and Navidad Rivers in the Edna and Ganado, Tex., areas. Damage from overflows was very light.

Heavy rain (over 2 inches) from the 4th to the 6th caused some flooding southwest of Corpus Christi, Tex. Many coastal stations reported rainfall during the period in excess of 7 inches. Local flooding reached serious proportions at Robstown and Bishop, Tex., where 200 and 100 families, respectively, were evacuated. Damage to crops was light and benefits from improved soil moisture more than offset flood damage, even though considerable acreage was inundated. Some local flooding occurred in Corpus Christi and Bishop, Tex., during the storm of the 23d and 24th. Only minor flooding occurred on streams.

PACIFIC SLOPE DRAINAGE

The flooding on the Eel River on the 29th and 30th was due to heavy rain on the 28th and 29th. Several thousand acres of farmland were under water at the peak of the flood. Damage from the flood was mainly due to debris and bank erosion.

Heavy rainfall (3.5 to 6.75 inches) from the 23d to the 26th produced a substantial rise on the Russian River, with a crest of a little above 27 feet at Guerneville, Calif., on the night of the 26th and 27th. Flood stage at this point is 29 feet. Many cabins in this resort area are inundated at stages several feet below the 29-foot flood stage.

Moderate to heavy precipitation occurred in the Sacramento Basin at all stations, with the snow level around 4,500 feet from the 23d to the end of the month. All rivers and streams reached and maintained high levels during the storm period

but remained below flood stage at all points except at the weirs. Overflow occurred at all of the fixed-sill weirs in the Sacramento Flood Control System into Butte Basin and Sutter and Yolo bypasses. Only moderate rises occurred on streams tributary to the San Joaquin, with reservoir storage absorbing most of these rises, permitting only slight rises to reach the lower San Joaquin.

The flooding on the Rogue River at Raygold, Oreg., on the 28th and 29th was due to heavy rain (3 to 5 inches) on the 27th and 28th. Rainfall was light in the headwaters. Runoff was rapid as the ground was saturated from previous rains. Double crests exceeding 14 feet (flood stage 12 feet) occurred at Raygold 12 hours apart on the 29th. This same storm caused flooding on the Umpqua River at Roseburg, Oreg., on the 29th. Precipitation over the Umpqua was lighter than over the Rogue and ranged from 2.5 inches in the headwaters to 3.5 inches in the middle and lower sections.

Several families along the main Rogue above Savage Rapids Dam, Oreg., were evacuated. Water did get into several houses, but damage was small. A bridge approach on Evans Creek near the town of Rogue River, Oreg., was destroyed; also, a section of the county road was washed out.

Light local flooding occurred on the McKenzie, Santiam, and Tualatin Rivers in Oregon between the 29th and February 1 from heavy rain beginning on the 24th. There was some local flooding on Mill Creek at Turner, Oreg., about 7 miles southeast of Salem. Shallow water ran through the business section for several hours. Several families were evacuated. A few secondary roads were closed for a short time due to the high water.

The flooding on the Snohomish and Snoqualmie Rivers in Washington on the 17th was due to more than 1 inch of rain in 12 hours on the 16th. No damage was reported.

FLOOD STAGE DATA

(All dates in January unless otherwise specified)

JANUARY 1958

River and station	Flood stage	Above flood stages		Crest *		River and station	Flood stage	Above flood stages		Crest *	
		From—	To—	Stage	Date			From—	To—	Stage	Date
ATLANTIC SLOPE DRAINAGE	ft			ft		MISSISSIPPI SYSTEM (Cont'd.)	ft			ft	
Charles:						Ohio Basin (Cont'd.)					
Charles River Village, Mass.	4	20	Feb. 7	6.1	29	Ohio (Cont'd.):					
Nepsonset: Norwood, Mass.	9	15	17	10.8	27	Dam 50, Fords Ferry, Ky.	34	Dec. 23	7	41.8	2
		22	Feb. 2			Dam 52, Brookport, Ill.	37	Dec. 26	4	38.2	3
Raritan: Bound Brook, N. J.	8	22	22	8.4	22	Dam 53, Wound City, nr., Ill.	42	Dec. 27	4	42.5	2
Milistone: Blackwells Mills, N.J.	7	22	22	7.5	22						
		25	25	7.5	25	<u>Red Basin</u>					
Perkiomen: Graterford, Pa.	8	25	25	8.3	25	Ouachita: Arkadelphia, Ark.	17	21	22	19.5	21
Roanoke:						Camden, Ark.	26	23	28	31.4	26
Randolph, Va.	21	27	27	21.0	27	Sulphur: Hedgesport, Tex.	38	14	17	41.2	21
Williamston, N. C.	10	19	5	10.7	1	Naples, Tex.	22	17	30	26.2	21
		23	1/	11.0	31					26.4	24
Tar: Greenville, N. C.	13	31	31	13.1	31	<u>Lower Mississippi Basin</u>					
Neuse: Neuse, N. C.	14	16	18	16.8	17	St. Francis: St. Francis, Ark.	18	Dec. 23	5	21.2	Dec. 27-28
	26	29	16.6	28	Big Black: Bovina, Miss.	28	25	31	29.0	29	
Smithfield, N. C.	13	15	19	16.2	19						
	26	30	17.0	27	WEST GULF OF MEXICO DRAINAGE						
Goldsboro, N. C.	14	18	23	16.5	22	Sabine: Quitman, Tex.	16	22	23	16.7	22
	28	Feb. 4	17.6	Feb. 1		Mincola, Tex.	14	21	28	15.5	21,22
Kinston, N. C.	14	22	27	14.8	25	Gladewater, Tex.	26	28	31	27.1	30
Cape Fear:						Bon Wier, Tex.	17	23	26	18.1	24
Moncure, N. C.	20	25	25	20.6	25	Deweyville, Tex.	14	24	31	14.8	26
Fayetteville, N. C.	35	15	16	35.0	15	Trinity: Liberty, Tex.	24	21	16	24.9	15
Lock No. 2, Elizabethtown, N. C.	20	15	19	27.9	16	Navidad: Genado, Tex.	21	24	26	26.2	24
	26	30	29.3	28	Lavaca: Edna, Tex.	21	25	25	21.0	25	
Rocky River: Norwood, N. C.	A16	24	26	26.2	25	Guadalupe: Victoria, Tex.	21	15	17	24.7	16
Pee Dee:						Frio: Tilden, Tex.	12	5	9	20.1	7
Cheraw, S. C.	30	25	27	36.75	26		12	12	13.0	12	
Peedee, S.C.	19	26	Feb. 5	22.6	31		23	26	20.0	25	
Saluda: Pelzer, S. C.	6	25	27	6.5	25, 26	Calibham, Tex.	11	5	9	25.6	6
Broad: Blair, S.C.	14	25	27	18.4	25		12	13	19.0	13	
Seavannah: Clyo, Ga.	11	1	1	11.1	1		23	26	20.85	24	
	3	23	12.2	16-17							
EAST GULF OF MEXICO DRAINAGE		28	1/			Atascosa: Whittett, Tex.	20	6	8	23.5	7
Tombigbee: Lock 3, Whitfield, Ala.	33	25	31	39.7	28		12	14	25.3	14	
Pearl:							24	25	22.25	25	
Jackson, Miss.	18	22	Feb. 2	22.5	26	Nueces: Tilden Crossing, Tex.	11	5	14	19.6	9
Bogalusa, La.	15	24	1/	17.7	26	Calallen, Tex.	7	6	27	15.1	25
Pearl River, La.	12	27	1/	12.9	29-30		27	31	8.3	29	
MISSISSIPPI SYSTEM <u>Upper Mississippi Basin</u>						PACIFIC SLOPE DRAINAGE					
Kaskaskia: Carlyle, Ill.	21	24	31	22.5	27	Eel: Fernbridge, Calif.	17.5	29	30	19.2	30
<u>Ohio Basin</u>						Sacramento: Moulton Weir, Calif.	76.8	27	28	79.0	27
Green: Lock 2, Calhoun, Ky.	23	Dec. 22	1	25.9	Dec. 27		30	31	79.0	31	
Skillet Fork: Wayne City, Ill.	15	21	25	20.1	22	Colusa Weir, Calif.	61.8	13	15	63.2	14
Little Wabash: Wilcox, Ill.	16	21	26	20.4	23		25	31	63.5	26	
White:						Tisdale Weir, Calif.	45.5	3	4	46.2	4
Elliston, Ind.	18	Dec. 19	Dec. 31	26.65	Dec. 23		11	17	47.7	14	
Edwardsport, Ind.	12	Dec. 19	6	23.3	Dec. 24		25	31	49.0	28	
		22	26	14.6	Dec. 24						
Petersburg, Ind.	16	Dec. 20	5	24.2	Dec. 26	Fremont Weir, Calif.	33.5	27	31	36.4	31
Hazelton, Ind.	16	Dec. 20		25.5	Dec. 27	Rogue: Raygold, Oreg.	12	28	29	14.4	29
Wabash:						McKenzie: Leaburg, Oreg.	12	29	29	12.4	29
Covington, Ind.	16	Dec. 20	Dec. 31	23.6	Dec. 23	Santiam: Jefferson, Oreg.	13	29	30	14.3	29
Montezuma, Ind.	14	Dec. 19	2	24.2	Dec. 23	Tualatin: Dilley, Oreg.	12	30	Feb. 1	12.4	31
Terre Haute, Ind.	14	Dec. 20	2	19.8	Dec. 23	Snoqualmie: Carnation, Wash.	51	17	17	51.7	17
Hutsonville, Ill.	A20	Dec. 21	2	23.8	Dec. 25, 26	Snohomish: Snohomish, Wash.	23	17	17	23.8	17
Riverton, Ind.	18	Dec. 21	4	21.2	Dec. 27						
Vincennes, Ind.	16	Dec. 21	5	22.9	Dec. 28						
Mt. Carmel, Ill.	17	Dec. 21	5	24.5	Dec. 28						
New Harmony, Ind.	15	Dec. 22	7	*20.1	Dec. 29						
Ohio:											
Mt. Vernon, Ind.	35	Dec. 29	4	36.1	2						
Dam 49, Uniontown, Ky.	37	Dec. 28	4	39.6	1						
Shawneetown, Ill.	33	Dec. 24	7	39.5	2						

* Provisional
† Highest observed stage
1/ Continued at end of month
A Tentative
E Estimated

RAWINSONDE DATA

Average monthly values

JANUARY 1958

TOPEKA, KANS. (986 MB.)							TUCSON, ARIZ. (927 MB.)							WASHINGTON, D. C. (1004 MB.)							WINNEMUCKA, NEV. (873 MB.)							YAKUTAT, ALASKA (998 MB.)						
Standard pressure surface (mb.)	Number of observations	Dynamic height	Temperature	Relative humidity	Wind direction	Wind speed	Number of observations	Dynamic height	Temperature	Relative humidity	Wind direction	Wind speed	Number of observations	Dynamic height	Temperature	Relative humidity	Wind direction	Wind speed	Number of observations	Dynamic height	Temperature	Relative humidity	Wind direction	Wind speed	Number of observations	Dynamic height	Temperature	Relative humidity	Wind direction	Wind speed				
SURFACE	31	269	-3.8	82	324	2.5	31	781	5.1	44	144	5.8	31	88	-1.3	71	299	5.4	31	1,310	-3.4	82	116	2.1	28	12	-0.7	85	81	6.4				
1,000--	31	157					31	156					31	119			302	6.8	31	217					28	-3								
950--	31	563	-5.5	70	314	3.5	31	580					31	525	-1.9	57	308	12.6	31	629					28	409	1.7	69	109	8.2				
900--	31	997	-1.2	62	317	7.8	31	1,026	9.4	33	141	4.9	31	957	-3.2	58	311	14.6	31	1,065					28	843	-1.1	70	127	7.4				
850--	31	1,454	-1.2	55	324	12.0	31	1,499	7.5	33	302	1.4	31	1,409	-4.2	58	306	15.7	31	1,520	-4	65	154	3.7	28	1,297	-4.1	71	146	7.4				
800--	31	1,936	-2.9	56	321	13.0	31	1,996	4.6	32	293	3.9	31	1,886	-5	55	295	15.2	31	2,007	-3	51	228	6.0	28	1,772	-7.1	69	149	8.0				
750--	31	2,445	-4.4	42	314	14.6	31	2,517	1.9	30	293	5.8	31	2,391	-7	47	283	17.1	31	2,518	-2.0	49	254	8.4	28	2,273	-10.2	63	165	9.5				
700--	31	2,986	-7.1	42	309	16.5	31	3,073	-1	32	293	11.7	31	2,927	-9	4	40	277	19.2	31	3,068	-5.0	49	274	9.3	28	2,801	-13.7	60	178	9.3			
650--	31	3,588	-10.0	39	309	17.7	31	3,656	-4.3	296	281	18.1	31	3,495	-12.2	51	271	22.5	31	3,643	-8.2	45	284	10.9	28	3,355	-17.5	61	191	9.9				
600--	31	4,175	-13.6	31	306	21.2	31	4,288	-8.2	299	21.8	31	4,105	-15.6	6	268	27.6	31	4,265	-12.2	42	287	12.4	28	3,955	-21.7	60	197	12.4					
550--	31	4,826	-18.0	32	309	22.2	31	4,951	-12.9	302	23.3	31	4,753	-19.5	5	269	32.3	31	4,922	-16.6	44	296	15.2	28	4,584	-26.0	58	204	16.5					
500--	31	5,536	-23.2	32	304	23.7	31	5,678	-18.0	301	26.0	31	5,459	-24.3	3	266	34.8	31	5,633	-21.3	41	304	19.6	28	5,275	-30.9	57	202	18.8					
450--	31	6,292	-29.2	32	303	28.5	31	6,451	-23.8	295	29.9	31	6,214	-29	4	262	36.9	31	6,396	-27.0	40	301	23.1	28	6,004	-36.2	58	202	18.5					
400--	31	7,129	-35.8	31	307	27.0	31	7,309	-29.8	298	33.6	31	7,052	-35	1	260	36.5	31	7,244	-33.1	38	301	27.6	28	6,824	-41.9	206	23.3						
350--	31	8,045	-42.5	31	296	30.1	31	8,249	-36.3	292	45.5	31	7,970	-41	1	260	38.9	31	8,169	-40.2	2	307	32.8	28	7,716	-48.2	209	19.6						
300--	31	9,071	-49.5	29	311	31.9	31	9,301	-43.9	295	49.4	31	9,004	-47	1	263	43.5	31	9,204	-48.0	1	313	34.0	28	8,720	-53.1	212	23.5						
250--	31	10,248	-55.1	31	10,544	31.0	31	10,507	-59	9	296	52.7	31	10,199	-51	2	260	51.7	31	10,387	-55.1	1	313	28.4	28	9,890	-54.0	222	20.8					
200--	31	11,671	-64.7	287	36.7	31	11,941	-55.8	288	58.9	31	11,641	-53	2	264	57.3	30	11,791	-58.3	1	300	35.2	28	11,337	-49.5	246	16.9							
175--	31	12,527	-53.6	286	37.1	31	12,789	-57.2	288	58.1	31	12,502	-53	0	265	52.7	29	12,635	-56.8	1	296	35.6	28	12,214	-48.4	244	17.1							
150--	31	13,519	-53.9	289	35.6	31	13,762	-57.7	288	53.6	31	13,494	-53.9	0	267	50.3	29	13,614	-56.1	1	299	31.5	28	13,230	-48.0	228	13.2							
125--	31	14,688	-54.9	285	32.6	31	14,909	-60.0	287	42.7	30	14,656	-56.1	1	262	44.1	29	14,772	-56.8	2	294	26.4	28	14,434	-47.3	230	11.5							
100--	31	16,108	-57.1	288	28.2	31	16,281	-63.3	290	33.0	30	16,069	-57.9	1	264	38.5	29	16,181	-58.1	2	297	20.6	27	15,910	-47.7	237	11.1							
80--	30	17,517	-58.3	292	28.1	31	17,657	-64.9	292	22.3	30	17,471	-59	3	269	31.9	28	17,585	-58.4	1	305	15.3	27	17,384	-47.6									
60--	28	19,334	-57.8	302	17.7	31	19,425	-61.8	305	10.5	30	19,271	-59	8	273	24.1	27	19,397	-56.7	1	337	8.5	26	19,289	-47.7									
50--	28	20,466	-57.4	313	15.2	30	20,559	-59.8	347	6.0	30	20,413	-59	5	278	23.1	27	20,555	-55.7	1	4	8.0	26	20,495	-47.9									
40--	27	21,894	-57.5	335	16.1	30	21,962	-57.6	38	8.2	29	21,812	-58	1	284	26.0	25	21,979	-54.4	1	36	10.9	25	21,975	-47.7									
30--	24	23,711	-57.3	340	17.7	30	23,784	-56.2	38	13.0	29	23,617	-58.6	0	283	30.5	23	23,822	-53.2	1	28	12.8	22	23,878	-48.7									
25--	17	24,854	-57.0	345	15.7	30	24,946	-55.3	42	13.4	27	24,771	-57	3	283	34.6	19	24,997	-53.3	1	24	18.1	14	25,116	-49.1									
15--																																		

Note: All observations scheduled at 1200, G.C.T. "Number of observations" refers to those of dynamic height only. Temperature, humidity or wind data may be missing for one or more pressure surfaces of some observations. The temperature and wind values are based on 16 or more observations at the surface or 5 observations at a standard pressure level for temperature and 10 for wind. Relative humidity data are not published for standard pressure surfaces having less than 16 actual observations.

Relative humidity data beginning with October 1, 1948, were computed and expressed in these tables on the basis of vapor-pressure over water. Upper air values of relative humidity at levels with temperatures less than 0°C, have formerly been

computed and expressed on the basis of the vapor-pressure over ice. All relative humidity observations are obtained by electric hygrometer and have been adjusted to compensate for the value occurring below the operating range of the humidity element

These average values for standard pressure surfaces were obtained by rawinsondes; dynamic height (geopotential) in units of .98 dynamic meter, temperature is degrees Celsius, relative humidity in percent, and resultant winds in degrees and knots. The resultant of wind speed are biased toward lower wind speeds as the number of observations on which the resultant is based lessens. See note following Table 22 in the January 1950 issue of Climatological Data, National Summary.

SOLAR RADIATION DATA

Solar radiation intensities, tabulated in langleys per minute on a surface normal to the direction of the sun.

JANUARY 1958

Date	Sun's zenith distance								Date	Sun's zenith distance										
	A. M.				P. M.					A. M.				P. M.						
	78°	75°	70°	60°	*	60°	70°	75°	78°	*	60°	70°	75°	78°	*	60°	70°	75°		
ALBUQUERQUE, N. MEX.																				
Air mass								Air mass								OMAHA, NEBR.				
	4.19	3.35	2.51	1.67	*	1.67	2.51	3.35	4.19		4.78	3.82	2.87	1.91	*	1.91	2.87	3.82	4.78	
Jan.	-----	-----	-----	1.50	-----	1.48	-----	-----	-----	-----	-----	-----	-----	-----	-----	M0.27	M0.24	M0.22		
13	-----	-----	-----	1.42	-----	1.35	1.23	1.10	-----	S0.31	-----	S.28	-----	M.27	M.24	M.22				
14	K0.63	1.26	1.34	-----	-----	1.49	1.35	1.23	1.12	-----	-----	-----	-----	-----	-----	-----	-----	-----		
15	K1.10	1.21	1.28	1.48	Cloudy	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----		
16	-----	-----	-----	1.49	-----	1.47	-----	1.15	1.09	-----	-----	-----	-----	-----	-----	-----	-----	-----		
17-21	-----	-----	-----	1.49	Cloudy	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----		
22	-----	-----	-----	1.47	-----	1.32	1.21	1.10	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----		
23	-----	-----	-----	1.47	Cloudy	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----		
24-27	-----	1.21	1.31	-----	Cloudy	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----		
29	-----	-----	-----	1.47	-----	1.47	1.32	1.21	1.10	-----	-----	-----	-----	-----	-----	-----	-----	-----		
30	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----		
31	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----		
Aver- ages	.87	1.26	1.31	1.47	-----	1.48	1.34	1.21	1.10	-----	-----	-----	-----	-----	-----	.26	.23	.21		
LINCOLN, NEBR.																				
Air mass								Air mass								BLUE HILL, MASS.				
	4.80	3.84	2.88	1.92	*	1.92	2.88	3.84	4.80		4.89	3.92	2.94	1.96	*	1.96	2.94	3.92	4.89	
Jan.	-----	-----	-----	1.07	-----	1.16	-----	1.09	0.99	0.88	-----	-----	-----	-----	-----	-----	-----	-----		
2	0.85	0.97	1.06	1.06	-----	1.15	-----	K.94	K.90	K.81	-----	-----	-----	-----	-----	-----	-----	-----		
3	-----	-----	-----	1.02	-----	1.14	-----	1.02	K.86	K.76	-----	-----	-----	-----	-----	-----	-----	-----		
5	-----	-----	-----	1.02	-----	1.17	-----	1.10	0.99	0.90	-----	-----	-----	-----	-----	-----	-----	-----		
6	-----	0.97	1.04	1.14	-----	1.21	-----	K.01	K.87	K.78	-----	-----	-----	-----	-----	-----	-----	-----		
7	-----	-----	-----	1.10	-----	1.21	-----	1.11	1.01	.93	-----	-----	-----	-----	-----	-----	-----	-----		
8	-----	-----	-----	1.10	-----	1.20	-----	K.09	K.97	.87	-----	-----	-----	-----	-----	-----	-----	-----		
9	-----	-----	1.09	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----		
10	-----	-----	-----	-----	-----	-----	-----	1.05	0.93	.82	-----	-----	-----	-----	-----	-----	-----	-----		
11	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----		
23	-----	-----	-----	1.06	-----	1.23	-----	1.05	.95	.86	-----	-----	-----	-----	-----	-----	-----	-----		
28	-----	.88	.99	KS1.09	KS1.22	KS1.24	KS1.23	KS1.11	KS1.01	KS.91	-----	-----	-----	-----	-----	-----	-----	-----		
Aver- ages	.85	.95	1.15	1.22	1.17	1.23	1.06	.95	.85	-----	-----	-----	-----	-----	-----	1.04	.93	.84		
MADISON, WIS.																	WASHINGTON, D. C. (WBCO)			
Air mass								Air mass								TUCSON, ARIZ.				
	5.00	4.00	3.00	2.00	*	2.00	3.00	4.00	5.00		4.56	3.65	2.74	1.83	*	1.83	2.74	3.65	4.56	
Jan.	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----		
2	-----	0.99	1.09	1.17	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----		
3	H1.66	H1.81	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----		
4	-----	0.84	0.98	1.08	-----	-----	-----	-----	-----	-----	1.20	-----	-----	-----	0.98	0.88	-----	-----		
5	-----	0.84	0.98	1.05	1.17	-----	-----	-----	-----	-----	1.24	-----	-----	-----	-----	-----	-----	-----		
6	-----	0.89	1.10	1.12	-----	-----	-----	-----	-----	-----	1.12	-----	-----	-----	S0.99	S.84	S.75	-----		
7	-----	0.81	0.93	1.07	-----	-----	-----	-----	-----	-----	1.08	-----	-----	-----	-----	.96	.82	.74		
9	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	1.24	-----	-----	-----	-----	-----	-----	-----		
10	-----	0.94	1.06	1.16	-----	-----	-----	-----	-----	-----	1.24	-----	-----	-----	-----	-----	-----	-----		
12	-----	0.98	1.06	1.16	-----	-----	-----	-----	-----	-----	1.24	-----	-----	-----	1.15	1.05	.96	-----		
19	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	1.07	-----	-----	-----	1.07	.97	.87	-----		
Aver- ages	.90	1.01	1.12	1.19	-----	1.19	-----	-----	-----	-----	1.04	.93	-----	-----	-----	-----	-----	-----	-----	

* Values corresponding to true solar noon
 M Moderate haze - indeterminate
 S Slight haze - indeterminate
 K Smoke
 KS Slight smoke
 KK Dump-fire smoke aloft

Langley is the unit used to denote one gram calorie per square centimeter. An explanation of the formula used in computing the air mass values for each station

listed above appears in the February 1957 issue, Vol. 8, No. 2, page 63, of this publication.

SOLAR RADIATION DATA

JANUARY 1958

Daily totals and average daily totals by weeks of solar and sky radiation, plus the radiation reflected from the ground, as received on a vertical surface facing south at Blue Hill, Mass. during the month

Date-----	Langleys-----																									Avg
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21				
Date-----	Langleys-----	3	492	418	570	521	534	13	364	329	434	607	427	627	581	30	434	7	15	16	17	18	19	20	21	148
Date-----	Langleys-----	22	23	24	25	26	27	28	29	30	31	1	2	3	4	355	274									
		23	548	339	4	14	16	19	137	56	181	518	45	145	610											

Daily totals and average daily totals by weeks of diffuse (sky) radiation as received on a horizontal surface at Blue Hill, Mass. during the month

Date-----	Langleys-----																									Avg	
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21					
Date-----	Langleys-----	14	57	59	41	41	38	35	41	83	58	40	95	38	56	53	61	15	16	17	18	19	20	21	61		
Date-----	Langleys-----	22	23	24	25	26	27	28	29	30	31	1	2	3	4	107	100										
		43	77	86	14	24	33	40	45	74	99	92	89	138	M												

Note: Langley is the unit used to denote one gram calorie per square centimeter.

NET RADIATION

Net radiation in langleys per day (midnight to midnight) at Raleigh, N. C., during the month

JANUARY 1958

Date.....	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Avg.
Date.....	-31	1	3	7	28	46	+29	-24	26	56	26	24	-5	62	61	64	32	41	48	73	-16	48	31	-8	146	110	33	62	+26	31	65	35

* Estimated values owing to occurrence of rain during period. While rain is falling, radiation is assumed to be zero.

The measurement is made with a Beckman and Whitley net exchange radiometer over a plot of Bermuda grass. The value represents the total incoming minus the total outgoing radiation of all wave lengths.

These data are of an experimental nature and are published as received from the North Carolina State College at Raleigh. The instrument with which they were measured has not been checked by the Weather Bureau.

SOLAR RADIATION DATA

Daily totals and weekly averages of solar radiation (direct and diffuse) received on a horizontal surface, tabulated in langleys.

JANUARY 1958

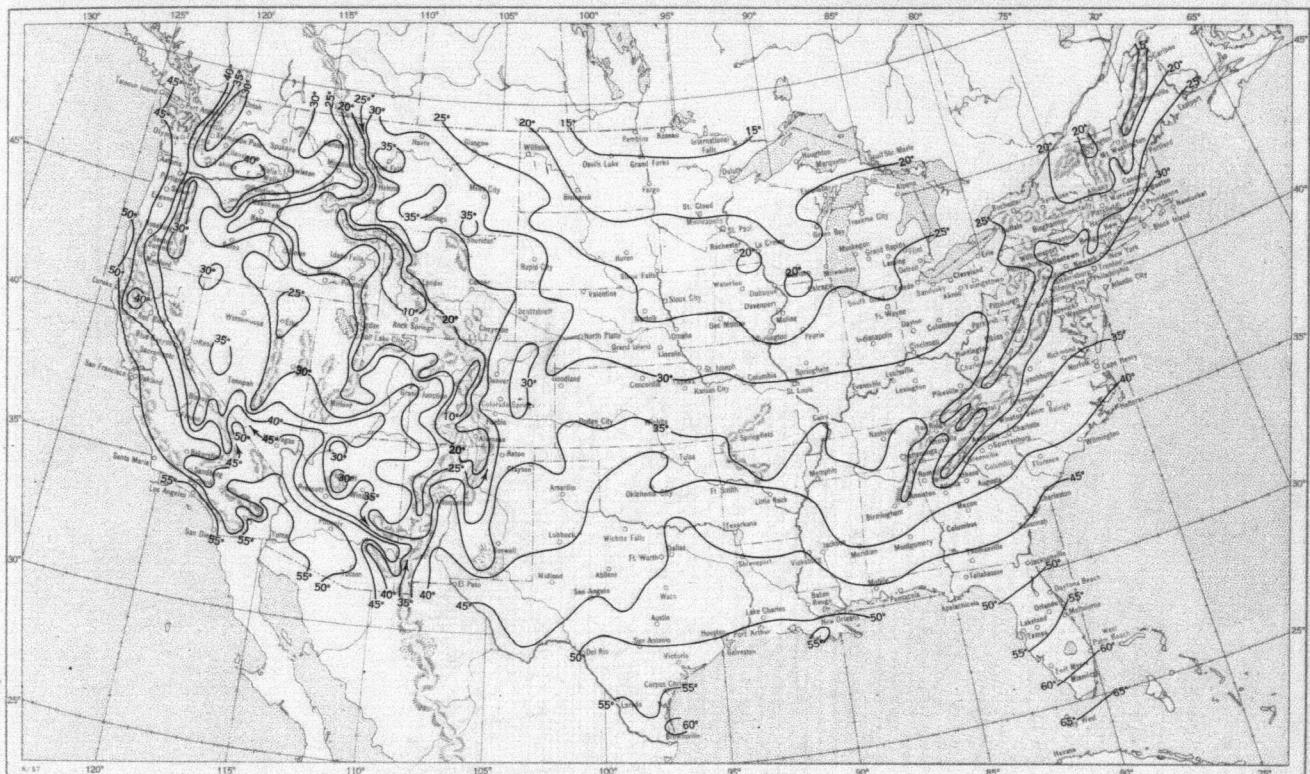
		Albuquerque, N. Mex.	Annette, Alaska	Apalachicola, Fla.	Astoria, Oreg.	Atlanta, Ga.	Barrow, Alaska	Bethel, Alaska	Bismarck, N. Dak.	Blue Hill, Mass.	Boise, Idaho	Boston, Mass.	Brownsville, Tex.	Canton Island Pacific Area	Cape Hatteras, N. C.	Charleston, S. C.	Caribou, Me.	Cleveland, Ohio	Columbia, Mo.	Davis, Calif.	Dodge City, Kans.	E. Lansing, Mich.	Ely, Nev.	Fairbanks, Alaska	Ft. Worth, Tex.	Fresno, Calif.	Gainesville, Fla.	Glasgow, Mont.	Grand Junction, Colo.			
1958	Jan.	1-----	328	52	43	62	242	*	12	192	21	167	7	213	522	187	27	49	---	277	105	141	290	150	218	4	344	247	36	157	251	
	Jan.	2-----	314	49	133	60	318	---	(31)	191	224	147	204	327	277	127	159	127	---	280	153	296	188	293	9	344	183	42	152	230		
	Jan.	3-----	274	49	360	123	313	---	34	186	187	217	169	144	506	120	161	209	---	240	161	248	191	249	347	4	295	42	259	158	251	
	Jan.	4-----	101	48	372	157	314	---	7	175	234	38	212	33	325	244	176	332	---	(250)	144	243	166	224	57	269	6	222	190	287	---	253
	Jan.	5-----	174	36	181	138	320	---	31	104	227	77	198	56	549	318	182	327	---	185	67	125	289	93	3	176	91	238	126	245		
	Jan.	6-----	329	56	29	93	119	---	10	185	216	202	189	51	607	342	83	126	---	249	78	57	(299)	75	359	258	---	168	40	27	154	252
	Jan.	7-----	333	113	305	61	322	---	12	183	36	219	29	405	645	(21)	68	83	---	201	58	44	---	222	352	268	3	354	83	39	149	255
	Average-----		265	57	203	99	278	---	(20)	174	164	152	144	175	490	(205)	118	184	---	(240)	102	144	(255)	193	264	251	5	272	125	140	149	248
	Jan.	8-----	322	63	394	64	343	---	21	188	181	78	132	381	602	294	69	237	224	238	84	138	305	250	306	---	4	353	154	280	159	257
	Jan.	9-----	329	101	389	22	345	---	49	144	211	182	192	193	137	331	182	340	200	238	56	62	284	235	364	276	7	305	116	320	156	256
	Jan.	10-----	--	116	329	87	294	---	26	181	247	101	213	395	136	349	197	260	194	251	78	153	309	359	8	332	253	245	128	244		
	Jan.	11-----	--	93	378	39	331	---	24	163	208	136	155	279	160	347	82	323	124	246	47	139	196	175	322	10	115	182	312	146	161	
	Jan.	12-----	--	91	250	41	251	---	29	186	253	31	231	405	437	372	198	307	193	63	16	44	57	224	379	239	(28)	63	168	275	75	256
	Jan.	13-----	--	64	315	69	28	---	38	64	251	207	212	413	367	207	176	56	153	120	129	253	144	219	342	163	28	208	278	25	60	197
	Jan.	14-----	--	346	74	337	16	114	---	43	194	55	165	48	293	370	309	163	197	27	181	34	170	159	377	282	17	207	231	226	141	268
	Average-----		--	86	342	48	244	---	33	160	201	129	169	337	316	316	152	246	159	191	63	137	216	203	350	228	(14)	226	197	240	124	234
	Jan.	15-----	351	75	207	55	243	---	42	184	17	67	3	406	476	256	55	185	69	220	87	146	275	108	356	278	19	297	177	227	120	231
	Jan.	16-----	346	69	396	12	352	---	54	68	31	198	5	298	659	---	48	336	69	136	54	99	310	210	267	257	6	359	214	220	161	274
	Jan.	17-----	289	101	397	136	75	---	51	51	82	64	45	135	171	355	47	342	103	31	119	63	316	236	231	287	14	333	99	325	---	262
	Jan.	18-----	85	15	406	150	337	---	25	34	52	273	46	118	363	367	89	361	164	223	56	292	228	276	204	213	11	206	52	328	139	157
	Jan.	19-----	240	68	360	110	232	---	31	36	182	263	153	174	488	387	106	291	215	162	89	233	130	156	111	288	9	26	220	310	189	95
	Jan.	20-----	223	134	140	43	221	---	53	55	260	120	207	186	155	347	226	194	150	17	95	117	176	85	205	246	10	56	285	111	197	298
	Jan.	21-----	359	84	401	52	206	---	20	222	111	256	72	421	306	84	211	29	56	65	174	252	305	64	282	115	47	383	89	35	154	300
	Average-----		271	78	330	80	238	---	39	93	105	177	76	248	374	299	112	249	118	122	97	172	248	162	236	241	17	237	162	222	160	231
	Jan.	22-----	367	79	242	59	285	---	33	52	45	258	22	60	358	343	39	347	58	329	114	191	356	177	245	341	23	300	239	229	60	298
	Jan.	23-----	381	144	49	29	156	---	24	210	259	38	224	284	592	289	94	142	126	252	33	71	354	231	(405)	223	39	142	225	14	---	271
	Jan.	24-----	329	120	165	66	25	---	82	56	207	66	186	439	510	110	145	28	43	363	36	58	250	91	391	109	57	328	40	116	38	214
	Jan.	25-----	170	93	385	136	299	---	38	89	18	164	4	431	530	357	120	365	18	198	140	69	353	160	410	255	45	210	192	344	81	90
	Jan.	26-----	311	126	417	224	97	---	38	194	24	68	8	431	551	330	93	185	147	90	196	165	351	173	334	165	57	353	134	196	46	110
	Jan.	27-----	132	86	446	33	325	---	44	249	38	75	9	322	---	382	113	379	44	125	37	138	109	68	282	306	61	293	100	350	37	143
	Jan.	28-----	390	141	437	93	360	---	66	220	40	43	19	292	---	386	197	388	57	173	71	173	320	114	426	156	61	77	247	345	---	201
	Average-----		297	113	306	91	221	---	46	153	90	102	68	323	508	314	114	262	71	204	90	124	299	145	(356)	222	49	243	168	228	52	190
	Jan.	29-----	367	151	194	40	49	4	46	107	74	43	57	437	---	290	225	69	73	321	---	40	320	125	413	286	25	338	216	33	116	190
	Jan.	30-----	309	136	(440)	61	314	9	54	152	152	67	138	434	---	278	93	228	143	111	---	204	(309)	112	406	298	25	353	317	297	114	150
	Jan.	31-----	408	152	425	42	239	6	18	137	280	175	229	444	---	366	99	378	178	76	---	230	366	124	449	342	17	371	300	345	243	337
	Feb.	1-----	410	18	457	146	98	7	39	176	91	216	97	447	---	284	155	185	128	328	---	176	351	226	438	347	18	381	154	450	190	340
	Feb.	2-----	382	71	472	118	271	11	33	266	162	175	144	440	---	144	124	404	134	215	---	55	(387)	169	407	293	21	390	83	457	222	335
	Feb.	3-----	302	88	487	102	381	5	38	253	310	59	278	461	---	365	209	406	158	375	---	175	319	315	349	108	16	385	246	464	223	165
	Feb.	4-----	193	173	480	131	423	6	33	143	233	203	188	203	---	444	293	426	256	154	---	117	334	279	388	167	22	132	84	481	129	170
	Average-----		339	113	(422)	91	254	7	37	176	186	134	162	409	---	310	171	300	153	226	---	142	(341)	193	407	263	21	336	200	361	177	241

Note.--Langley is the unit used to denote one gram calorie per square centimeter.

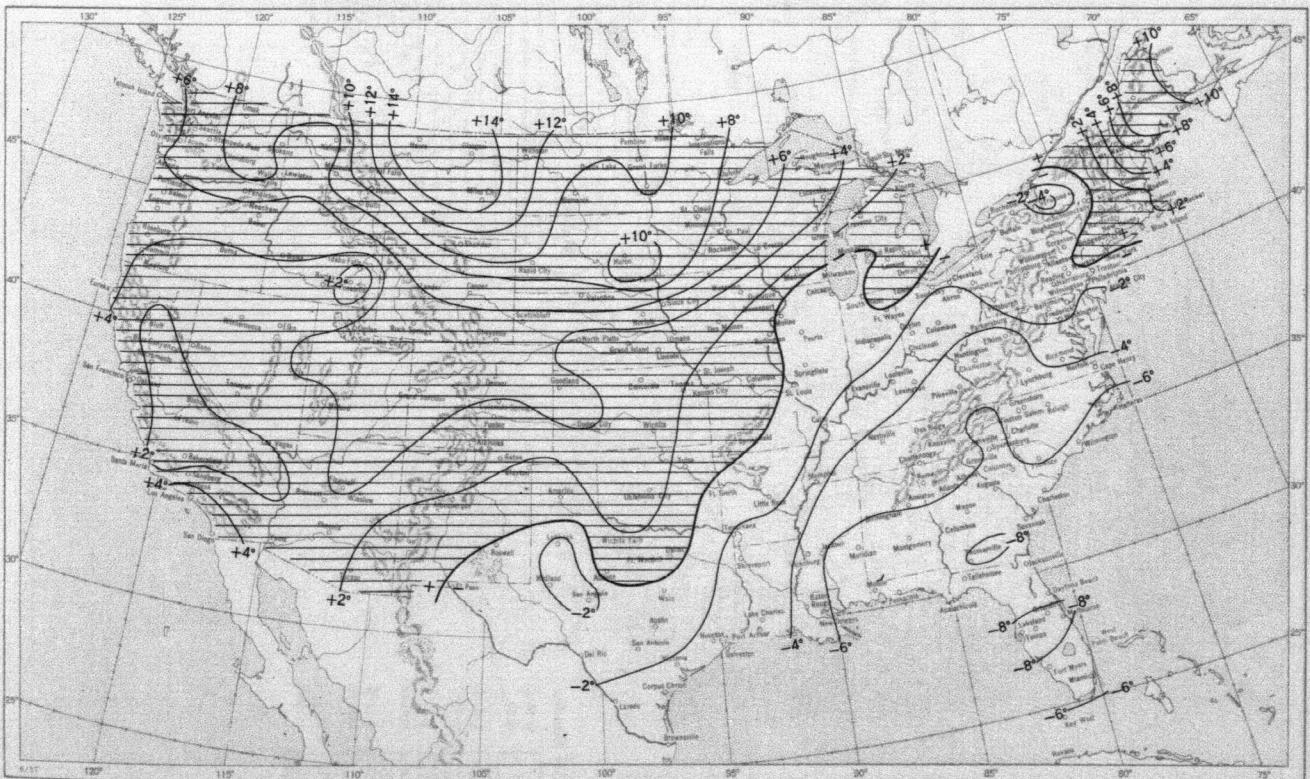
Values in parentheses are interpolated.

* Sun below horizon through Jan. 28.

Chart I. A. Average Temperature ($^{\circ}$ F.) at Surface, January 1958.



B. Departure of Average Temperature from Normal ($^{\circ}$ F.), January 1958.



A. Based on reports from over 900 Weather Bureau and cooperative stations. The monthly average is half the sum of the monthly average maximum and monthly average minimum, which are the average of the daily maxima and daily minima, respectively.

B. Departures from normal are based on the 30-yr. normals (1921-50) for Weather Bureau stations and on means of 25 years or more (mostly 1931-55) for cooperative stations.

Chart II. Total Precipitation (Inches), January 1958.

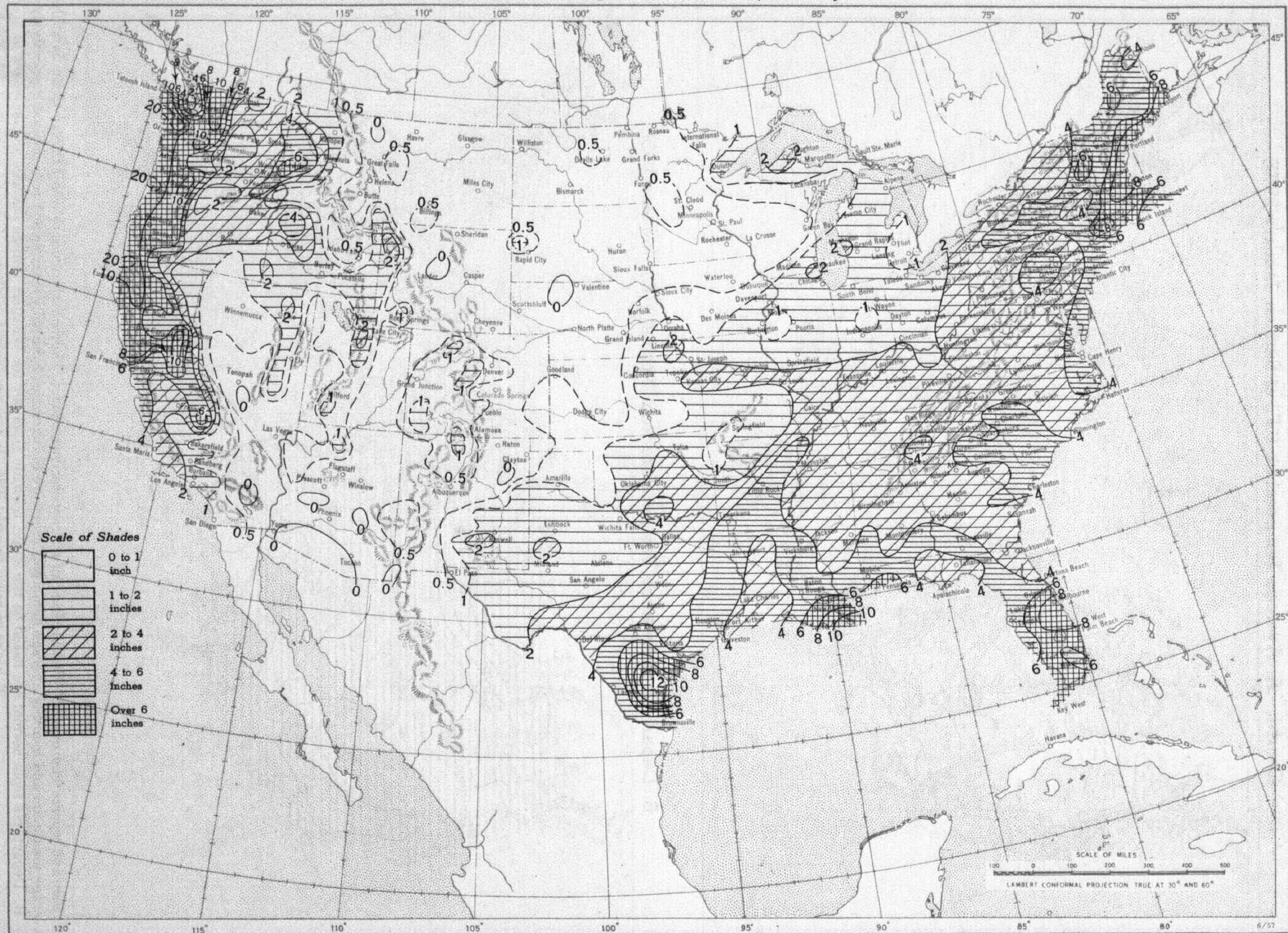


Chart III. A. Departure of Precipitation from Normal (Inches), January 1958.

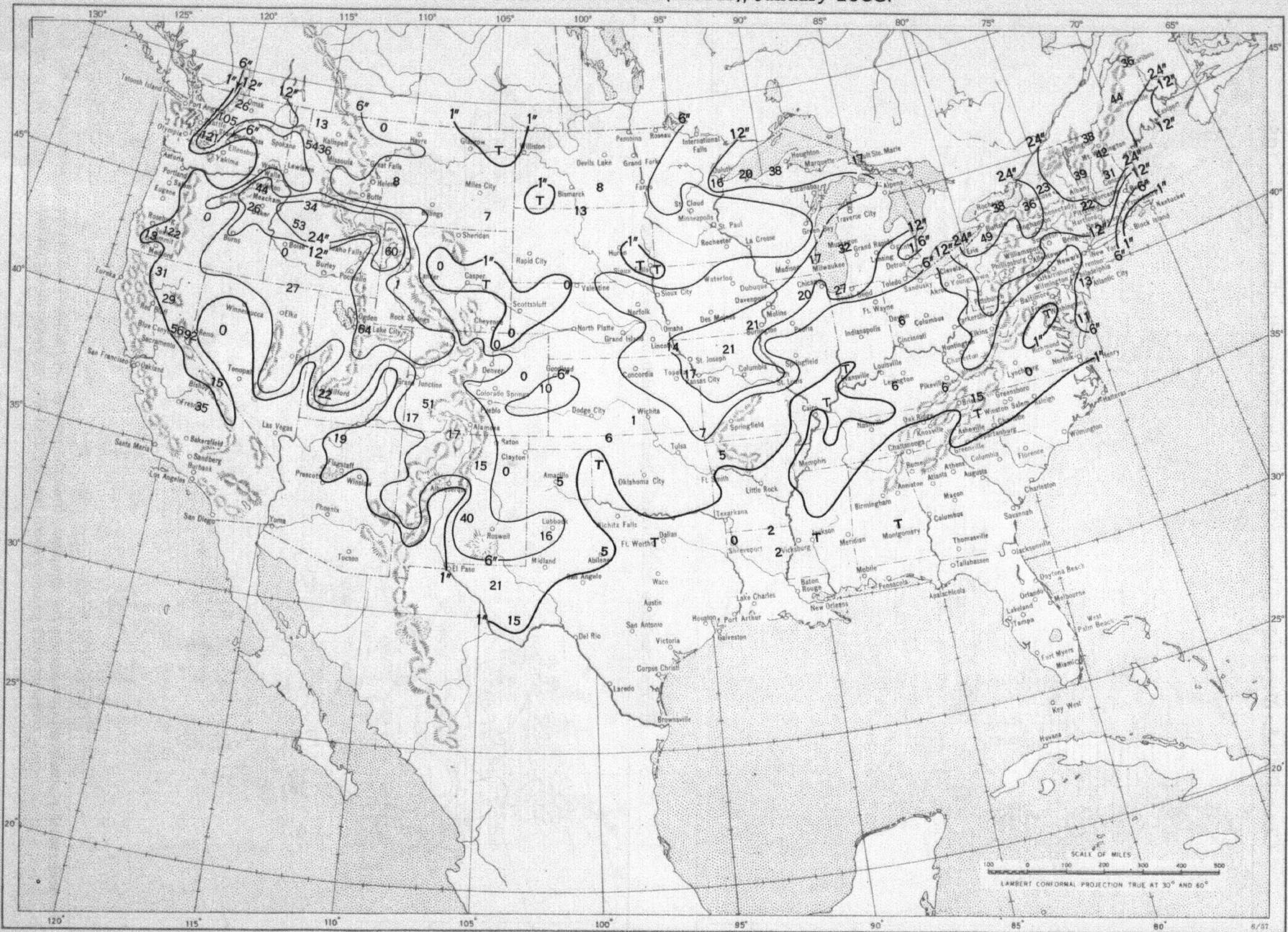


B. Percentage of Normal Precipitation, January 1958.



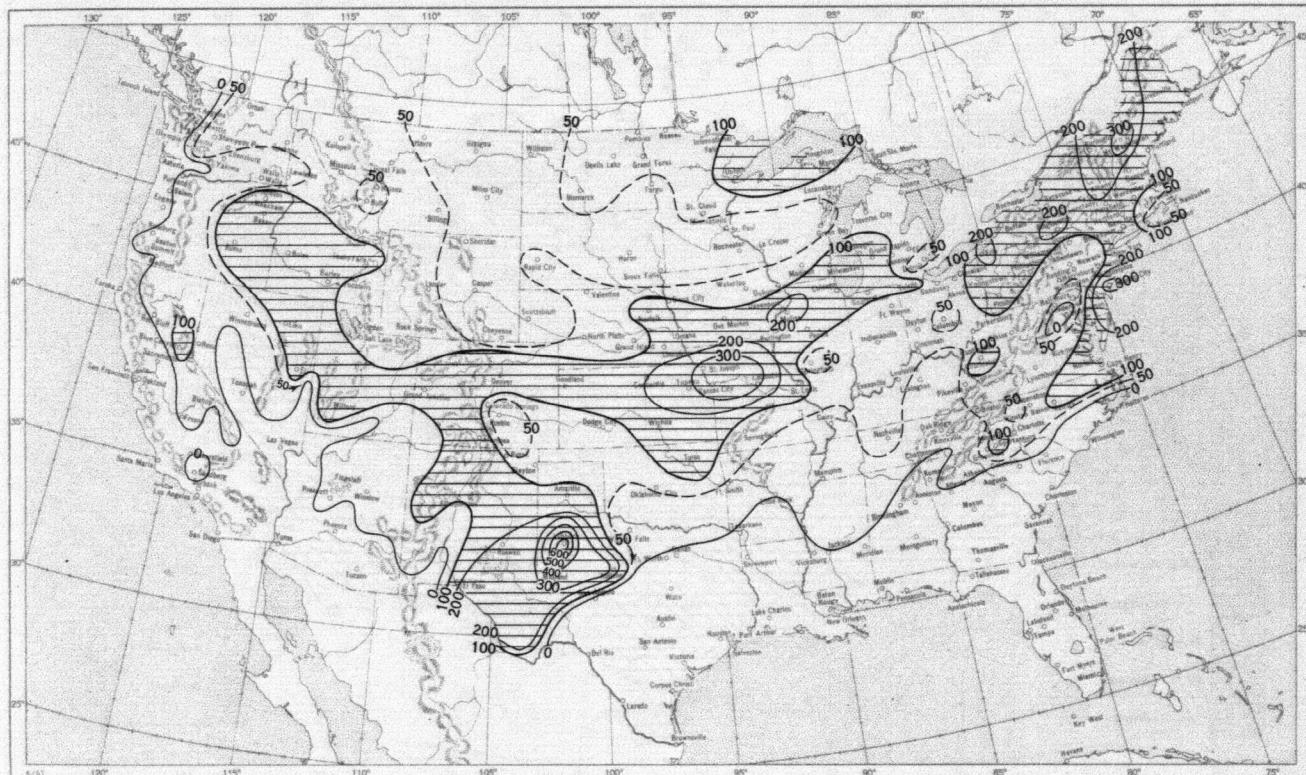
Normal monthly precipitation amounts are computed from the records for 1921-50 for Weather Bureau stations and from records of 25 years or more (mostly 1931-55) for cooperative stations.

Chart IV. Total Snowfall (Inches), January 1958.

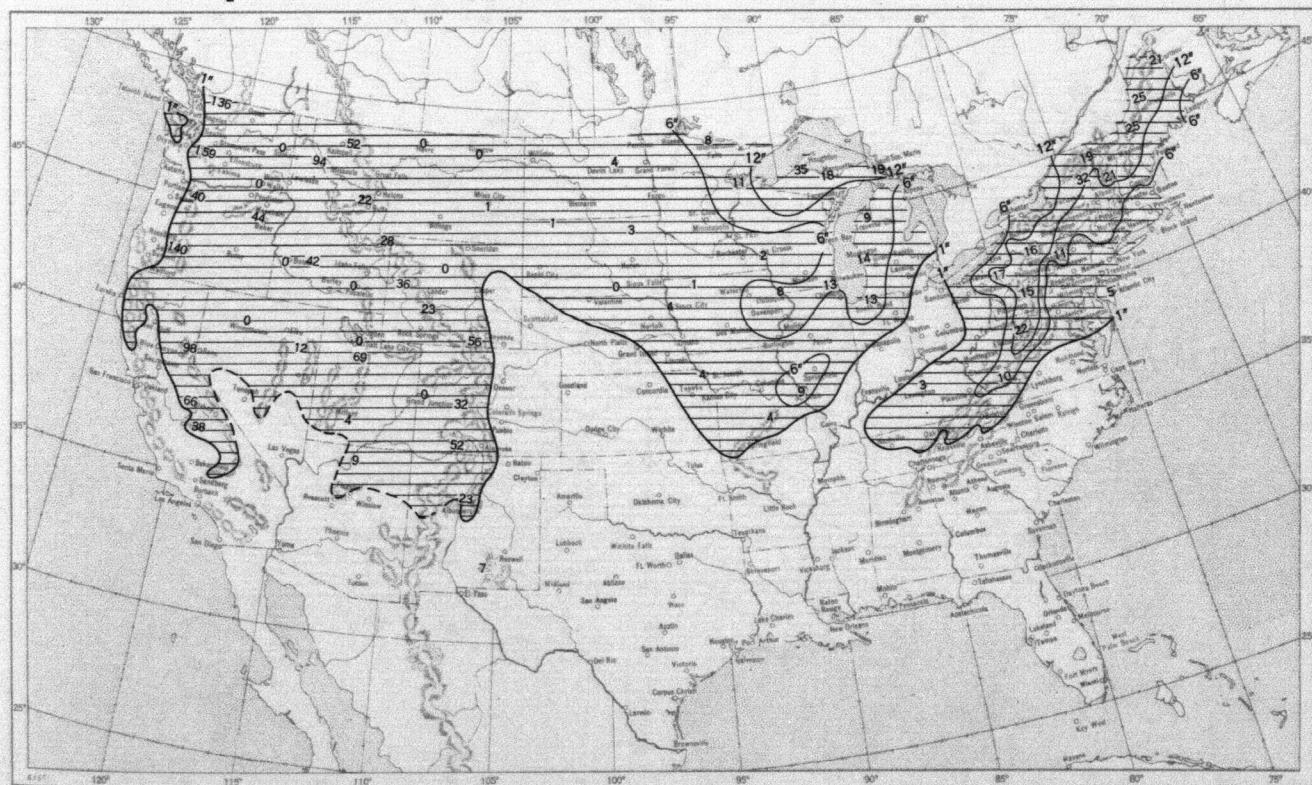


This is the total of unmelted snowfall recorded during the month at Weather Bureau and cooperative stations. This chart and Chart V are published only for the months of November through April although of course there is some snow at higher elevations, particularly in the far West, earlier and later in the year.

Chart V. A. Percentage of Normal Snowfall, January 1958.

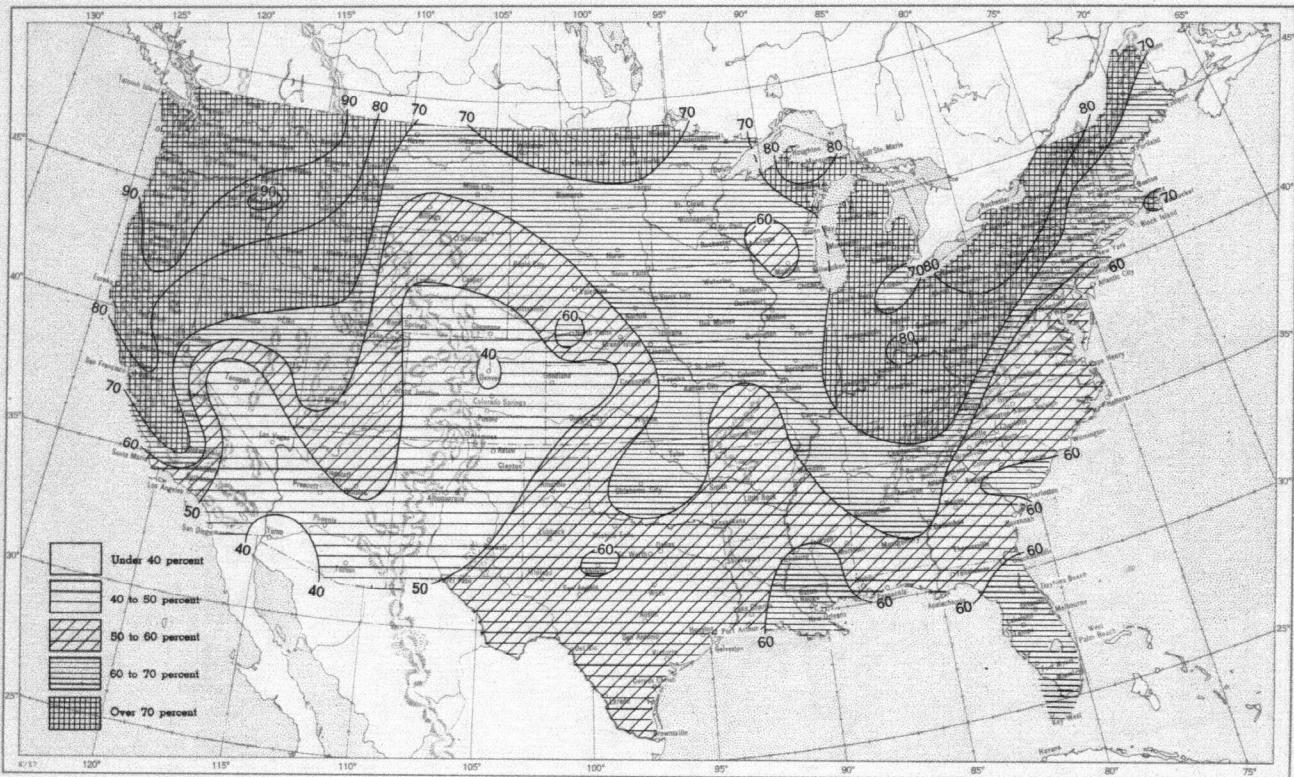


B. Depth of Snow on Ground (Inches), 7:00 a. m. E. S. T., January 27, 1958.

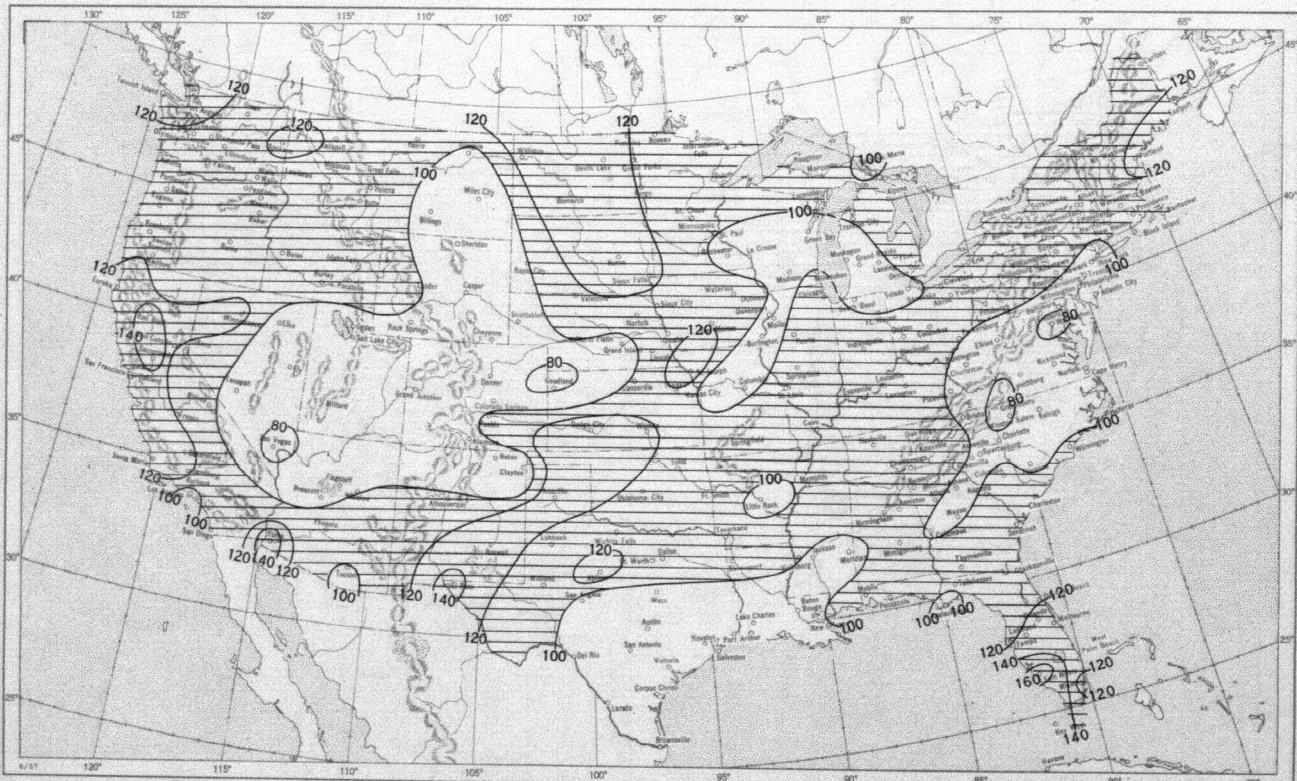


A. Amount of normal monthly snowfall is computed for Weather Bureau stations having at least 10 years of record.
 B. Shows depth currently on ground at 7:00 a.m. E.S.T., of the Monday nearest the end of the month. It is based on reports from Weather Bureau and cooperative stations. Dashed line shows greatest southern extent of snowcover during month.

Chart VI. A. Percentage of Sky Cover Between Sunrise and Sunset, January 1958.

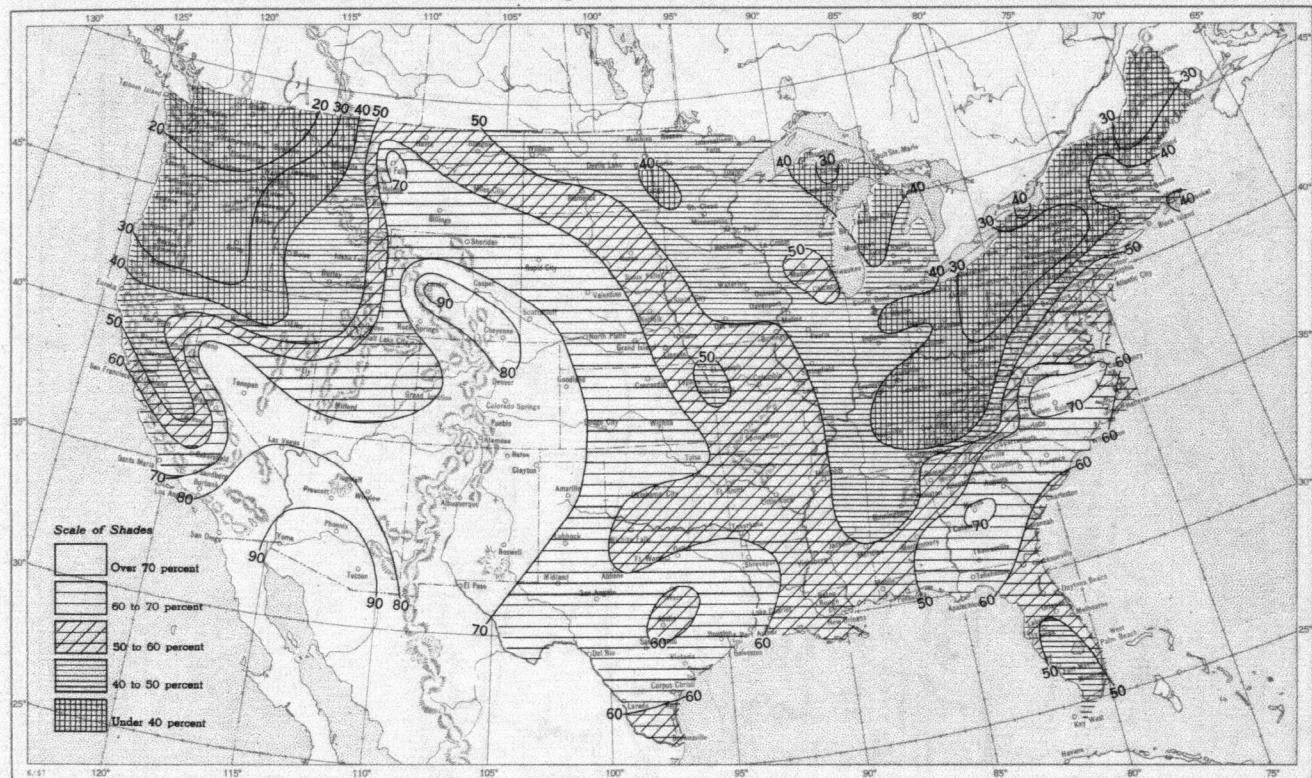


B. Percentage of Normal Sky Cover Between Sunrise and Sunset, January 1958.

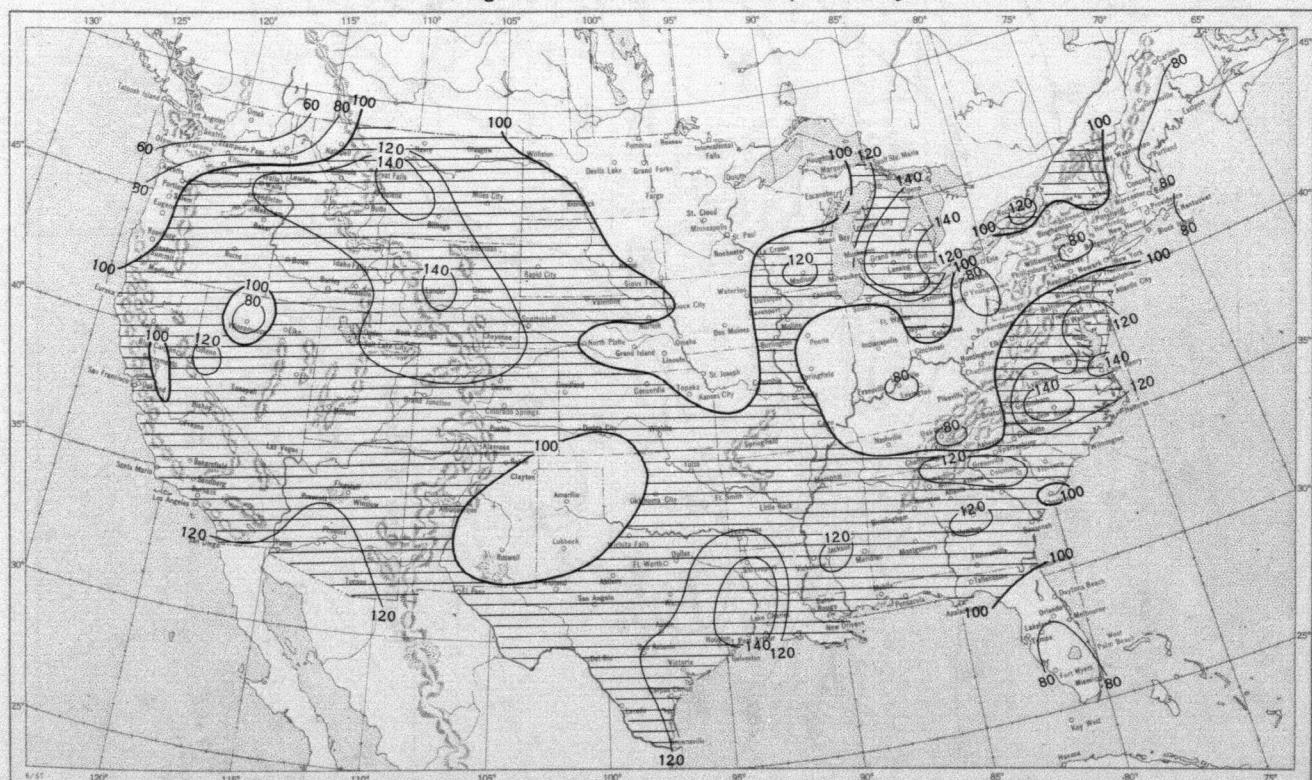


A. In addition to cloudiness, sky cover includes obscuration of the sky by fog, smoke, snow, etc. Chart based on visual observations made hourly at Weather Bureau stations and averaged over the month. B. Computations of normal amount of sky cover are made for stations having at least 10 years of record.

Chart VII. A. Percentage of Possible Sunshine, January 1958.



B. Percentage of Normal Sunshine, January 1958.



A. Computed from total number of hours of observed sunshine in relation to total number of possible hours of sunshine during month. B. Normals are computed for stations having at least 10 years of record.

Chart VIII. Average Daily Values of Solar Radiation, Direct + Diffuse, January 1958. Inset: Percentage of Mean Daily Solar Radiation, January 1958. (Mean based on period 1951-55.)

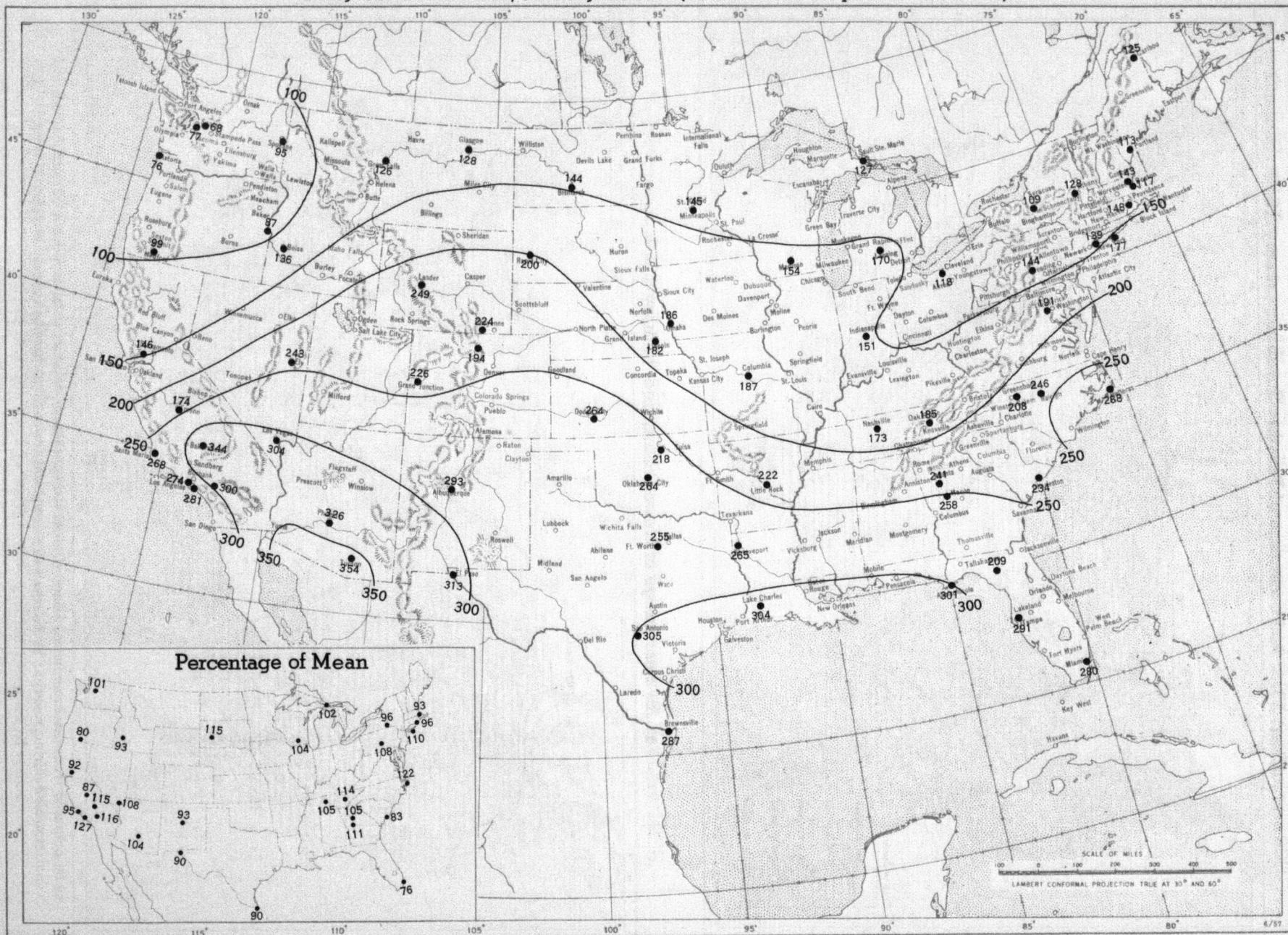
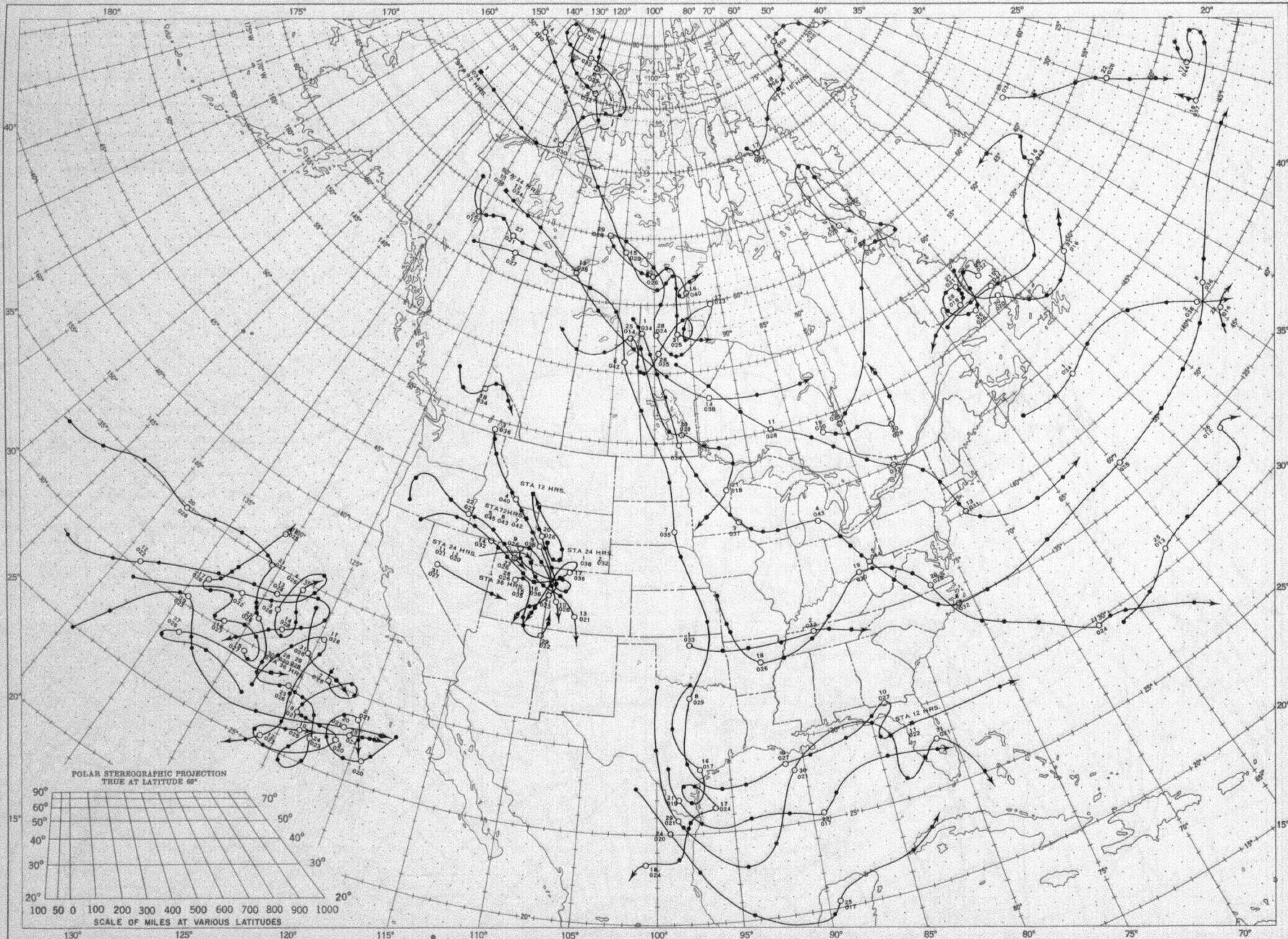


Chart shows mean daily solar radiation, direct + diffuse, received on a horizontal surface in langleys (1 langley = 1 gm. cal. cm.⁻²). Basic data for isolines are shown on chart. Further estimates are obtained from supplementary data for which limits of accuracy are wider than for those data shown.

Chart IX. Tracks of Centers of Anticyclones at Sea Level, January 1958.

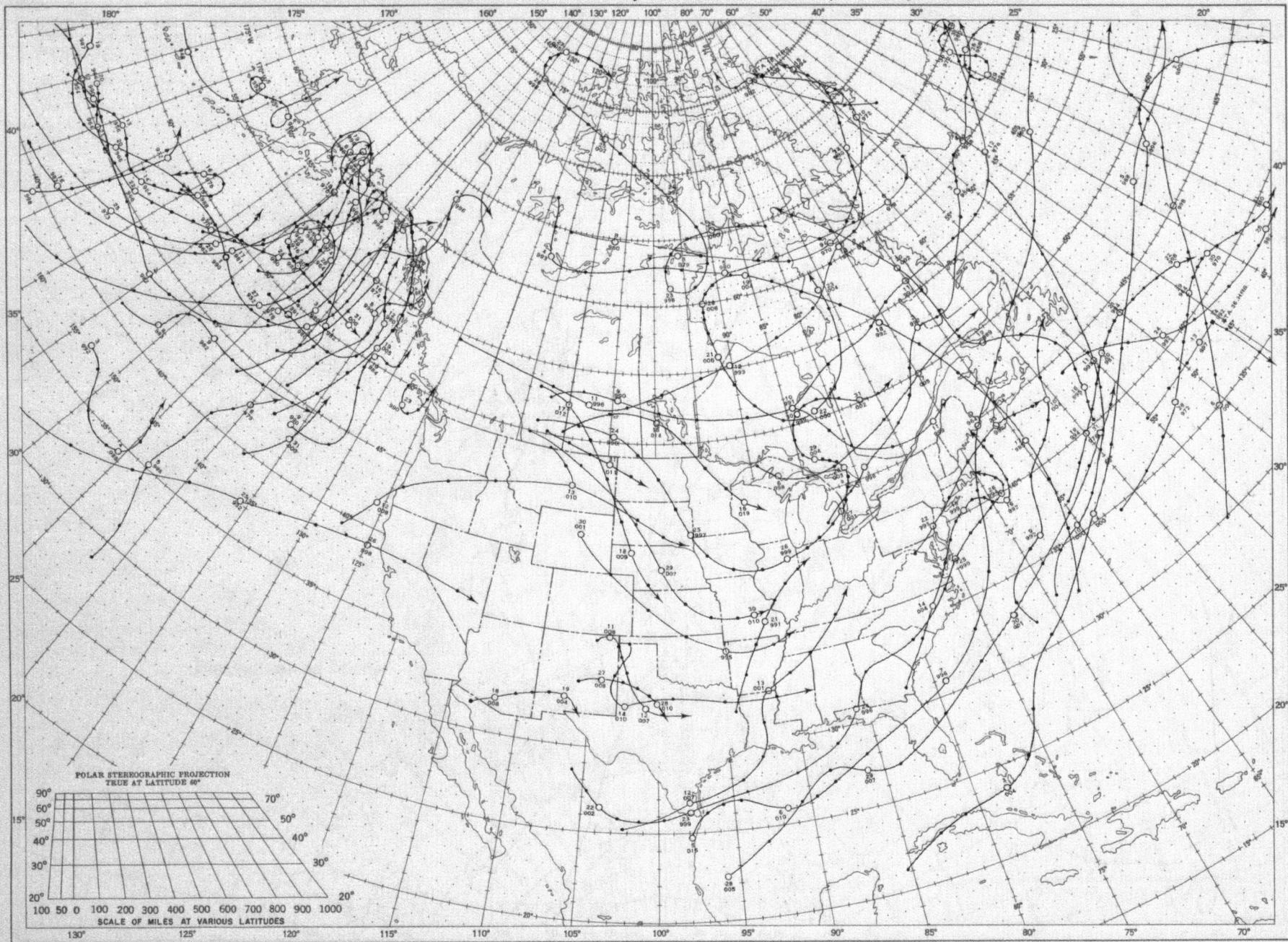


Circle indicates position of center at 7:00 a.m. E. S. T. Figure above circle indicates date, figure below, pressure to nearest millibar.

Dots indicate intervening 6-hourly positions. Squares indicate position of stationary center for period shown. Dashed line in track

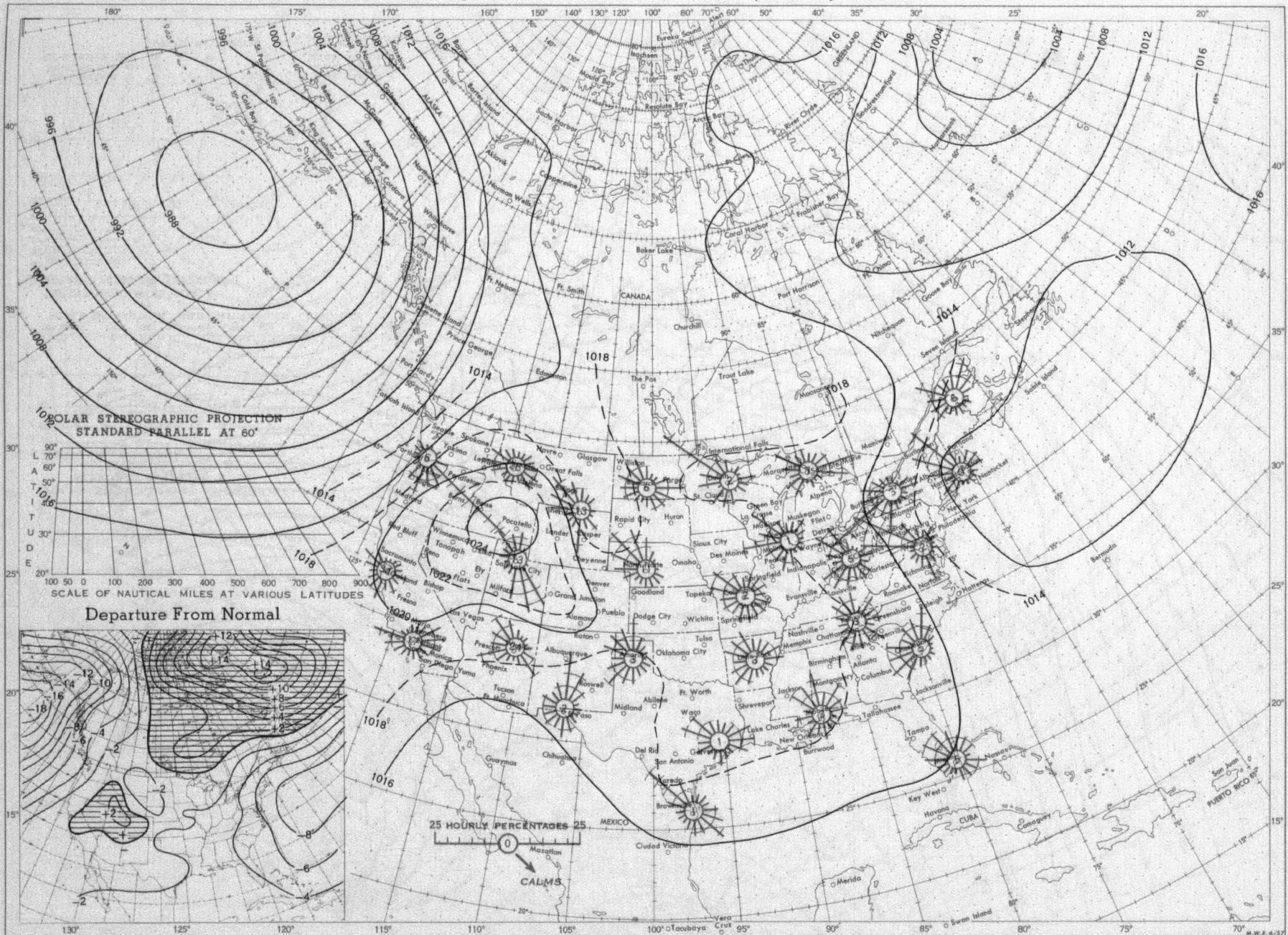
indicates reformation at new position. Only those centers which could be identified for 24 hours or more are included.

Chart X. Tracks of Centers of Cyclones at Sea Level, January 1958.



Circle indicates position of center at 7:00 a. m. E. S. T. See Chart IX for explanation of symbols.

Chart XI. Average Sea Level Pressure (mb.) and Surface Windroses, January 1958. Inset: Departure of Average Pressure (mb.) from Normal, January 1958.



Average sea level pressures are obtained from the averages of the 7:00 a.m. and 7:00 p.m. E.S.T. readings. Windroses show percentage of time wind blew from 16 compass points or was calm during the month. Pressure normals are computed for stations having at least 10 years of record and for 10° intersections in a diamond grid based on readings from the Historical Weather Maps (1899-1939) for the 20 years of most complete data coverage prior to 1940.

Chart XII. 850-mb. Surface, 1200 GMT, January 1958. Average Height and Temperature, and Resultant Winds.

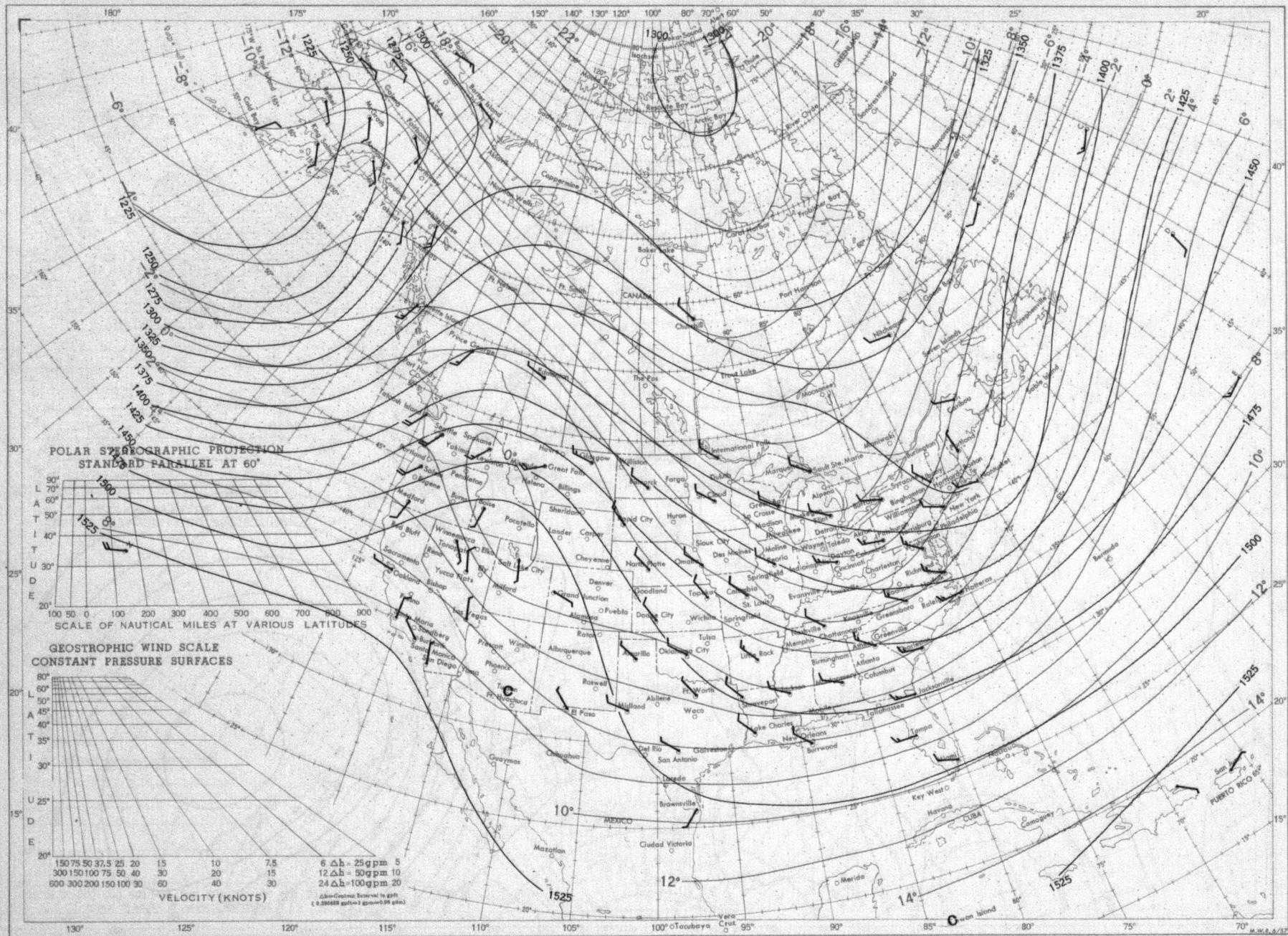
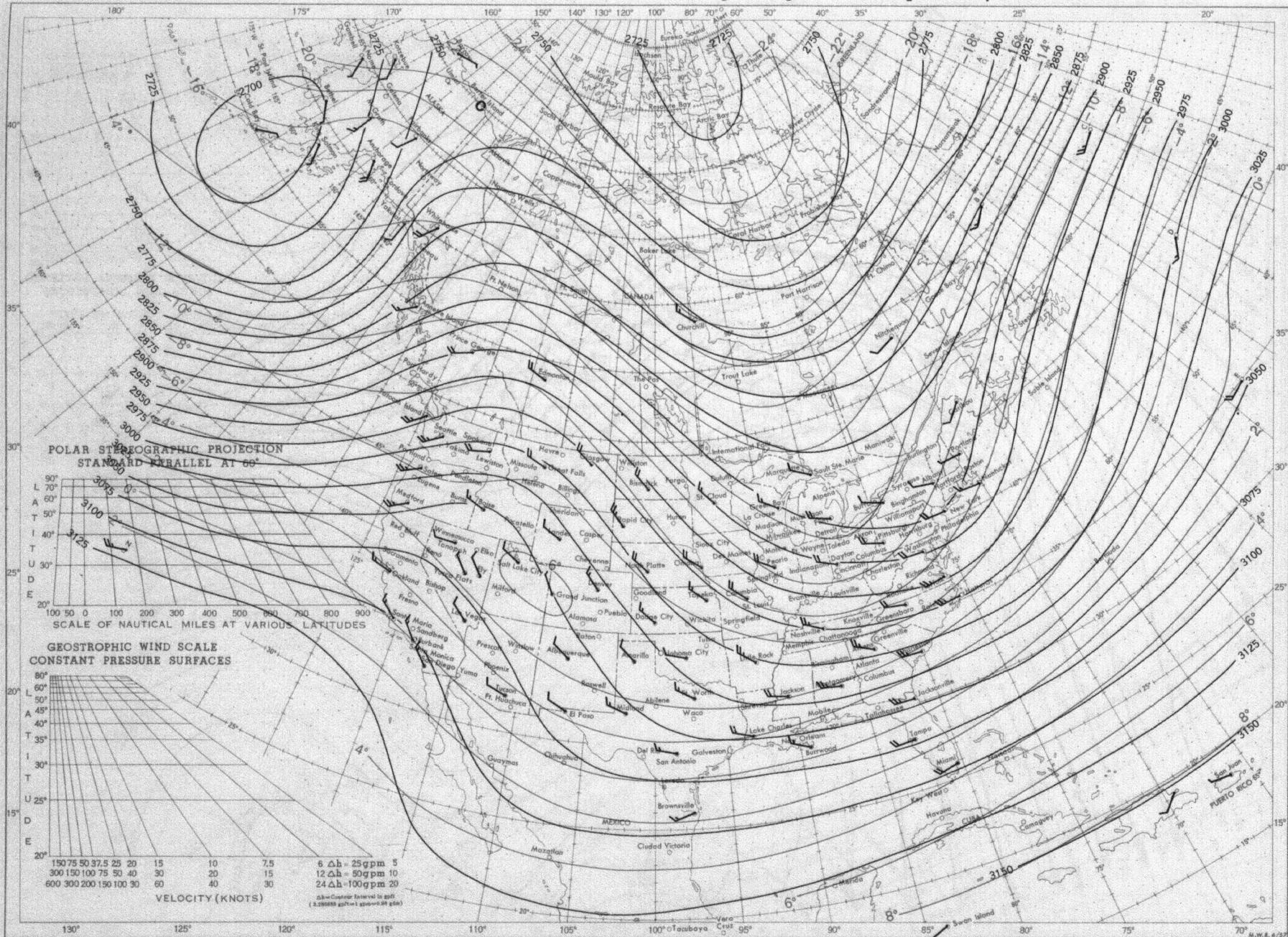


Chart XIII. 700-mb. Surface, 1200 GMT, January 1958. Average Height and Temperature, and Resultant Winds.



See Chart XII for explanation of map.

Chart XIV. 500-mb. Surface, 1200 GMT, January 1958. Average Height and Temperature, and Resultant Winds.

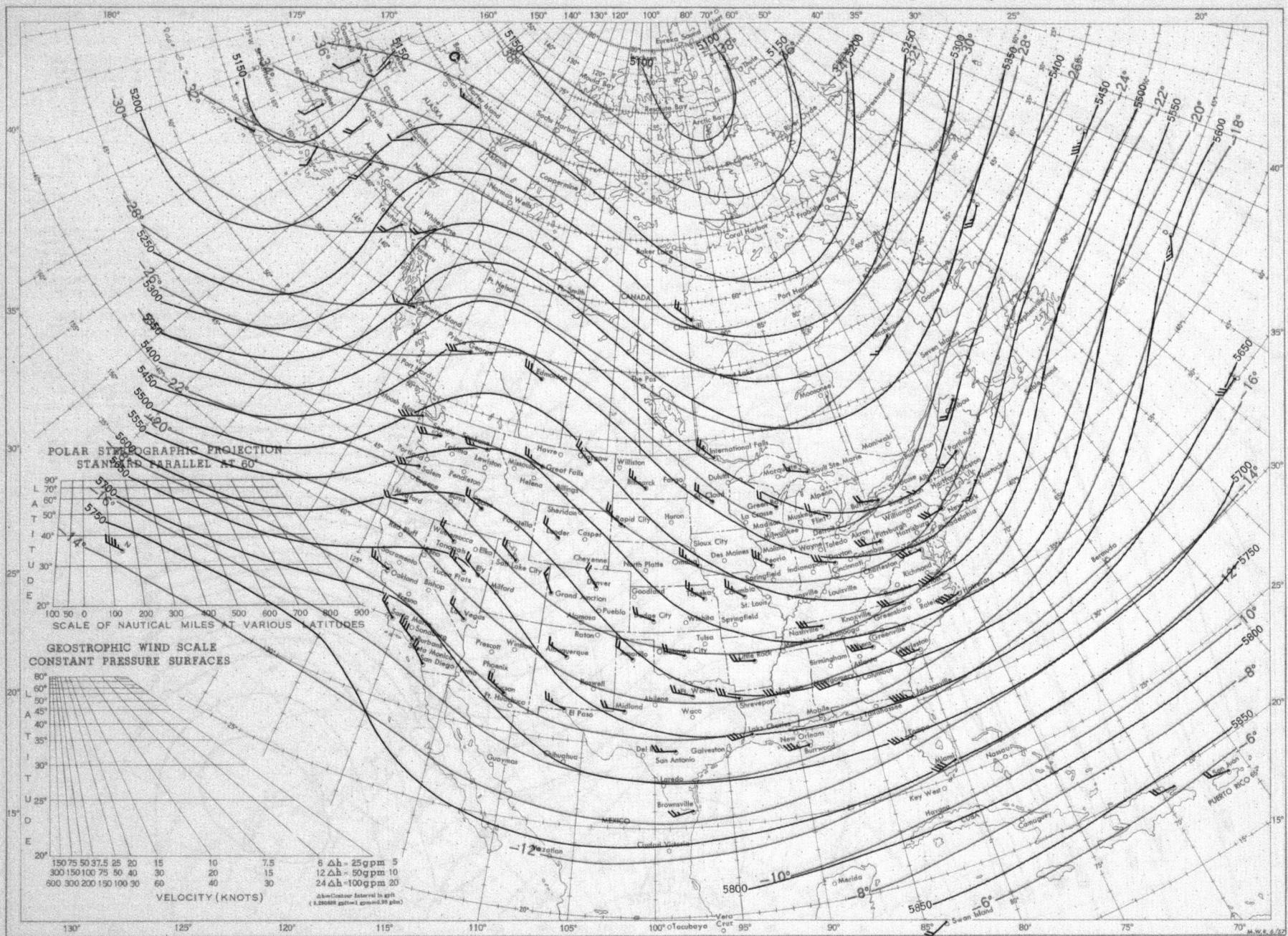
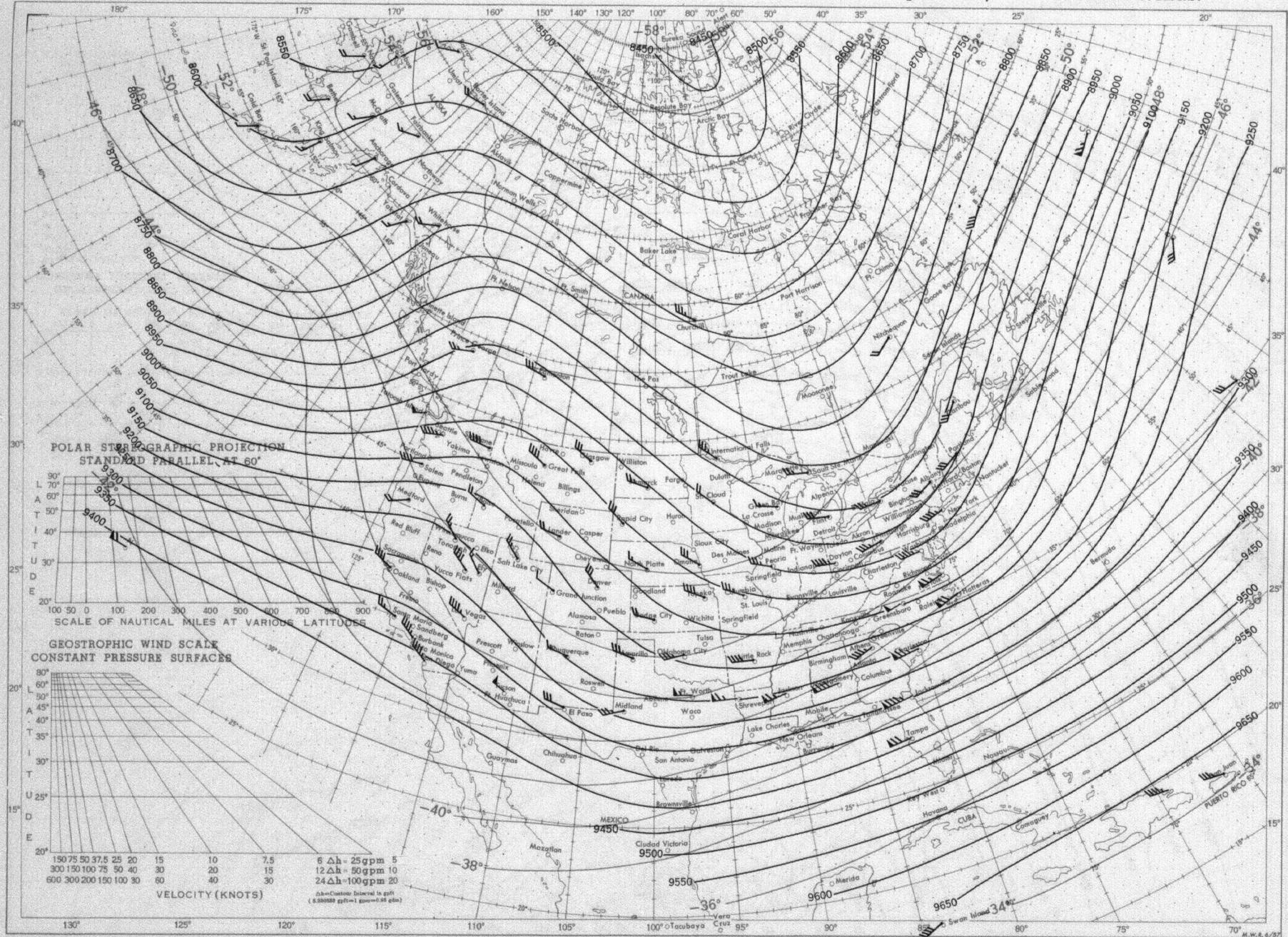


Chart XV. 300-mb. Surface, 1200 GMT, January 1958. Average Height and Temperature, and Resultant Winds.



See Chart XII for explanation of map.

Chart XVI. 200-mb. Surface, 1200 GMT, January 1958. Average Height and Temperature, and Resultant Winds.

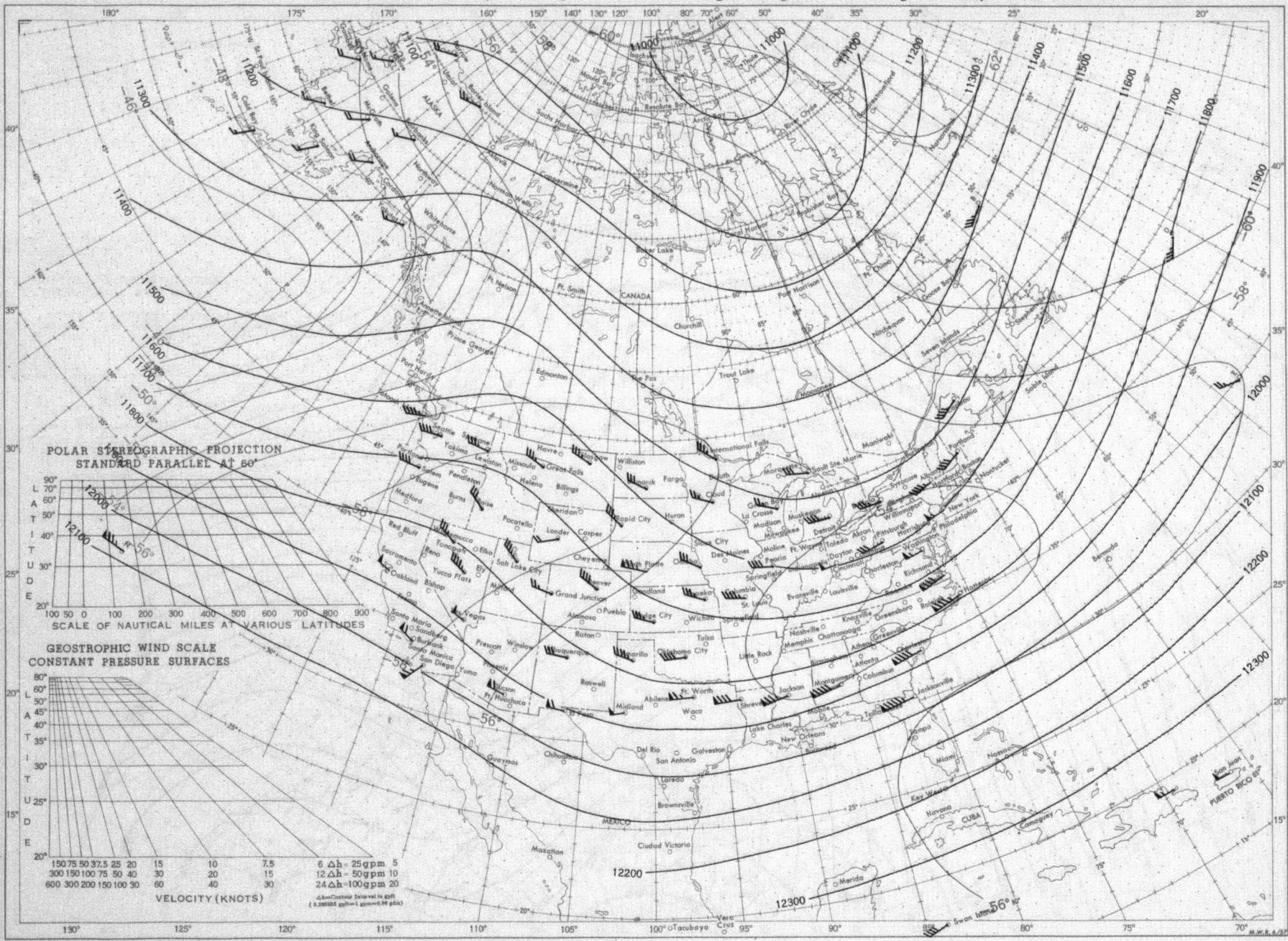


Chart XVII. 100-mb. Surface, 1200 GMT, January 1958. Average Height and Temperature, and Resultant Winds.

